Remarks

To reply the 11-7-2005 Office Action (O.A.), Applicant has reorganized his arguments of the 9-6-2005 Reply, to put the most important arguments first, and to list major arguments, facts and evidences. However, the applicant's Reply of 9-6-2005 is still valid, that is organized to address each point raised in the 6-6-2005 O.A., especially, in the same sequence as the one in the O.A. in order to easily check that every point raised in the O.A. has been addressed and responded.

The Reply of 9-6-2005 has addressed all points raised in the 6-6-2005 O.A., distinctly and specifically pointed out the errors in the O.A. of 6-6-2005, and amended the claims to overcome technical rejections and define the invention patentable over the prior art. Thus, by complying with 37 CFR 1.111, the Reply of 9-6-2005 is fully responsive to the 6-6-2005 O.A.

The signed Record of the Substance of the Interview of 8-22-2005 was submitted by the Applicant on 9-7-2005 and was received by the PTO on 9-12-2005. It is complete and accurate. For convenience, a copy of the Record of the Substance of the Interview of 8-22-2005 was sent together with the 9-6-2005 Reply.

In the Reply of 9-6-2005, applicant also made amendments to respond to the claim rejection – 35 USC 112. For that part and the explanation of the amendment on the claims, please refer to the Reply of 9-6-2005, as well as the Record of the Substance of the interview of 8-22-2005. For convenience, this most up-to-date set of claims is included in the present Reply.

The Applicant respectfully requests the PTO to consider each one of the points, facts, evidences and arguments in the present Reply and all his previous Replies that address and respond to all points in the corresponding O.As. Applicant respectively requests Examiner to comply with MPEP 707.07(f) Answer All Material Traversed – "Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it". Applicant again respectfully requests the PTO for reconsideration of the application as a whole.

The above claims are submitted to be patentable over the art of record for the reasons as listed in the Reply of 9-6-2005 and below.

I. Request for Constructive Assistance

Following the previous two telephone interviews of 8-22-2005 and 3-15-2005, Applicant respectfully requests Examiner to write one or more allowable claims for the present invention and the constructive assistance and suggestions, pursuant to MPEP 707.07(j) and 7.43.04 in order that undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

II. Response and Rebuttal to the Claim Rejections – 35 USC 103

In the following, if the mentioned O.A. is without a specific date, it is of 6-6-2005.

II.1. Claim 30 is Unobvious and Patentable Over Urruti 5551967 and Yamamura 6220057.

The examiner's Action is in error and the grounds for rejections on Urruti and Yamamura are in error because the O.A. fails to establish a prima facie case of obviousness, the proposed combination of Urruti and Yamamura is inoperative, destroys the both references processes, and still misses the applicant's claimed key steps, moreover, the action and grounds distort the references, are against the facts, and do not follow the 35 USC 103, Rule in Graham v. John Deere, court decisions and MPEP policy as pointed out in the Reply of 9-6-2005 and highlighted below.

II.1.1. The O.A. again distorts and wrongly cites MPEP 2145 III to the fact that the combination of Urruti and Yamamura is inoperable.

The O.A. [p.21, L.21-22, p.22, L.1-7] statement is in error by stating:

"As to the combination of reference being inoperable:

Examiner notes From MPEP 2145:

III. ARGUING THAT PRIOR ART DEVICES ARE NOT PHYSICALLY COMBINABLE

See also in re Sneed, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983)

('[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); and IN re Nievelt, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures.")"

However, the full and correct citation of MPEP 2145 III is as follows:

- **MPEP 2145 Ⅲ. ARGUING THAT PRIOR ART DEVICES ARE NOT PHYSICALLY COMBINABLE**

  "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also In re Sneed, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); and In re Nievelt, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures.").

  However, the claimed combination cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose. See MPEP § 2143.01. [emphasis added]

It is clear that the O.A. is in error by omitting an important part of MPEP 2145 Ⅲ as underlined above, distorting MPEP 2145 Ⅲ and citing it for the suggested inoperable combination.

- **This error is in the 4-18-2005 O.A.** [p.2, L.22-25] as pointed out in the 5-10-2005 Reply [pp.54-55, III.7; pp.17-18, I.5], **and this error is repeatedly in the 6-6-2005 O.A. after applicant pointed out.**
- **The examiner's Action intentionally or obviously omits this important part in MPEP 2145 Ⅲ to support the proposed inoperable combination, thus it should not be permitted.**
- **Thus, applicant submits that the rejections based on the proposed inoperable combination of Urruti and Yamamura, or Yoshimura and Yamamura, are improper and should be withdrawn.**

II.1.2. The O.A. fails to establish a *prima facie* case of obviousness because the proposed combination of Urruti and Yamamura is inoperative and destroys the both references processes. The O.A. fails to follow one basic criterion: "there must be a reasonable expectation of success" In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) [MPEP 2142]. The O.A. also fails to comply with MPEP 2143.01.

It is a clear fact and evidence as listed below that if combined or modified as the O.A.

suggests, their two process control systems would give conflict controls for preform movement, and thus destroy the references and the whole combined process. Thus, it is inoperative and destroys the references.

Yamamura 6220057 relates a process for manufacturing glass ingot, and not fiber, at best it relates to preform for an optical fiber manufacturing ["Field of the Invention", col.1, L.5-10].

For example, Yamamura's monitor 6b detects a glass ingot outer diameter large, while Urruti's process detects a drawn fiber outer diameter is small in a practical case. Because Yamamura's monitor 6b detects an outer diameter large, therefore in Yamamura's process, "the take-off speed of the drawn rod" should relatively increase in order to maintain the desired rod diameter. However, due to the combination, this take-off speed of the drawn rod in glass ingot process is the preform feeding speed in the fiber drawing process. It means that the preform feeding speed is increased. On the other hand, because Urruit's process detects a fiber outer diameter small, therefore Urruti's control system in Figure 5 should be telling the fiber drawing "tractor mechanism" and the preform feeding speed to slow down, just the opposite of what Yamamura's process commands. The conflict commands destroy both Urruti's process and Yamamura's process.

Similar conflict will also happen when Yamamura's monitor 6b detects a glass ingot outer diameter small, while Urruti's process detects a fiber outer diameter large. Then, the conflict commands destroy both Urruti's process and Yamamura's process.

Moreover, in another case, when Urruti process control needs the feeding speed to fast, it makes Yamamura's glass ingot take-off speed fast and its ingot diameter smaller, then the signals from Yamamura's outer diameter measuring device 6b will change the take-off speed to slow, just the opposite of what Urruti's process needs. These conflict commands again destroy both Urruti's process and Yamamura's process.

Thus, inevitable changes detected by Yamamura's monitor 6b or Urruti's monitors will lead to destroy both Urruti and Yamamura processes by the proposed combination.

Thus, the proposed combination and modification would be inoperative if it were simultaneously to perform a fiber drawing process from a glass ingot or preform in the Yamamura's process.

Thus, the proposed combination and modification is inoperable and destroys the intended

operation and the both reference processes. Thus, the proposed combination and modification is not successful.

- **Therefore, the O.A. fails to follow one basic criterion: "there must be a reasonable expectation of success" In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) [MPEP 2142].**
- **The O.A. also fails to comply with MPEP 2143.01:**

  MPEP 2143.01 THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE

  If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

- **Thus, applicant submits that the rejections based on the proposed inoperable combination of Urruti and Yamamura, or Yoshimura and Yamamura** [4-7-2005 Reply p.25, A.3.5]**, are improper and should be withdrawn.**

II.1.3. There is no motivation to make the O.A. proposed combination or modification in the references and available public knowledge. Moreover, it is a fact that the O.A. fails to follow MPEP 2143.01 and the court decision because the proposed combination renders the prior art unsatisfactory for its intended purpose in view of the inoperable combination. Thus, there is no suggestion or motivation to make the proposed modification.

The O.A. [p.17, L.17-18] also recognizes that "Examiner completely understands this – no rejection indicates the motivation comes from the references themselves."

However, the O.A [p.17, L.14-15] states in error that: "In this case, the motivation comes from knowledge generally available to one of ordinary skill in the art".

Please see the following fact, reasons and evidence. Applicant submits that the rejection on the references should be withdrawn.

- **The O.A. fails to point out where that "knowledge generally available to one of ordinary skill" is from**, after he recognizes that "Examiner completely understands this – no rejection indicates the motivation comes from the references themselves" [p.17, L.17-18].

Thus, the O.A. lacks the grounds to support the above statement.

- Furthermore, the O.A. states "Presently, one of ordinary skill would combine the relevant teachings to obtain "dramatic improvement" and a significantly more robust process" [p.17, L.18-20]. [emphasis added]

  Here, a key word is "Presently" that the O.A. states and recognizes.

  This is objective evidence that the motivation for combining or modifying features of the references is as being based on hindsight from the present invention which applicant submitted in 2000.

- **That the suggestion to combine the references should not come from applicant was forcefully stated in Orthopedic Equipment Co. v United States, 217 USPQ 193, 199 (CAFC 1983):**

  "It is wrong to use the patent in suit [here the patent application] as a guide through the maze of prior art references, combining the right references in the right way to achieve the result of the claims in suit [here the claims pending]. Monday morning quarterbacking is quite improper when resolving the question of nonobviousness in a court of law [here the PTO]."

- Applicant would further cite the following. As was further stated in **Uniroyal, Inc. v. Rudkin-Wiley Corp., 5 USPQ2d 1434 (CAFC 1988),**

  "[w]here prior-art references require selective combination by the court to render obvious a subsequent invention, *there must be some reason for the combination other than the hindsight gleaned from the invention itself. ... Something in the prior art must suggest the desirability and thus the obviousness of making the combination.*" [emphasis added]

- **Moreover, it is a fact that the O.A. fails to follow MPEP 2143.01 and the court decision because the proposed combination renders the prior art unsatisfactory for its intended purpose of fast and quality manufacturing in view of the inoperable combination and the court decision.**

  MPEP 2143.01 THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE

  If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

II.1.4. Furthermore, the O.A. does not follow MPEP 2143.03 because, even as modified or combined of Urruti in view of Yamamura, the resultant teachings still omit one or more of applicant's claimed features as recited below because

(1) Yamamura does not teach measuring the outer diameter of final glass ingot after inevitable shrinkage;

(2) his last measurement of ingot is in furnace 10 of Figs. 1 and 5; and

(3) Urruti and Yamamura's combined control system lacks the claimed features in Claim 30.

- **Claim 30 recites:**
  - "measuring a preform outer diameter by a measurement device located before a heating and melting stage, in which the preform is fed and is changing its geometrical size substantially to form said optical fiber by drawing;"
  - "providing the preform measurement and ... into a control system";
  - "calculating a preform diameter deviation of the measured preform diameter from a preselected nominal preform diameter value,"
  - "generating control signals based on the preform deviation and the fiber deviation for said optical fiber drawing process control;" and
  - "adjusting the feeding speed of said preform and the drawing speed of said fiber as said control signals command".
- **MPEP 2143.03 All Claim Limitations Must Be Taught or Suggested**

  To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).
- **Thus, based on *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) and MPEP 2143.03, the O.A. fails to establish *prima facie* obviousness of a claimed invention.**
- **Thus, applicant submits that the rejections on the proposed combination of Urruti and Yamamura, or Yoshimura and Yamamura, are improper and should be withdrawn.**

II.1.5. The O.A. is in error and the grounds for rejections are in error because the action and grounds distort the references, are against the facts, and do not follow the 35 USC 103 and Rule in *Graham v. John Deere*, as pointed out below. The O.A. fails to

ascertain all major differences between the prior art and the claims at issue as required in *Graham v. John Deere.* Thus, the O.A. distorts the references and the present invention by ignoring the differences.

- Supreme Court statement in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966):

"Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims as issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter to patented. As indicia of obviousness or nonobviousness, these inquires may have relevancy ...

This is not to say, however, that there will not be difficulties in applying the nonobviousness test. What is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context. The difficulties, however, are comparable to those encountered daily by the courts in such frame of reference as negligence and scienter, and should be amenable to case-by-case development. We believe that strict observance of the requirements laid down here will result in that uniformity and definitiveness which Congress called for in the 1952 Act."

- However, the O.A. only has one sentence to this inquiry (2) [p.15, L14]:

"Urruti does NOT have the claimed preform measurement."

- **Thus, the O.A. fails to ascertain the above recited key differences between the prior art and Claim 30 at issue. Even if Urruti and Yamamura were to be combined or modified in the manner proposed, the resultant teachings still omit one or more of the significant physical features as listed above in II.1.4.**

- **Thus, the O.A. fails to ascertain all major differences between the prior art and the claims at issue as required in *Graham v. John Deere.* Thus, the O.A. distorts the references and the present invention by ignoring the differences.**

II.1.6. In resolving the level of ordinary skill in the pertinent art, the O.A. ignores the facts and evidence of un-success of combination, and fails to follow the Rule and the policy by omitting key differences, ignoring no motivation for an unsuccessful combination, and ignoring Yamamura's teaching away, which applicant has pointed

out in 4-7-2005 Reply [p.16, p.20, A.2]. **Thus, the O.A. fails to comply with *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), and MPEP 706.02(j) and 2141.02.**

- The O.A. [p.16, L.1-5] states "The level of ordinary skill includes monitoring what is put into a process. As evidenced by Yamamura, it is known that diameter changes and to take account of the changes and that taking account of the changes. See prior Office actions which discusses Yamamura. It is well within the level of ordinary skill to compensate for the uneven diameters as discussed with Yamamura." **This statement in the O.A. is in error as pointed as follows:**

(1) In the above statement, **the O.A. ignores evidences in Yamamura's teaching, i.e.,**

- **how Yamamura takes account of the changes;**
- **how Yamamura compensates for the uneven diameters "as discussed with Yamamura";**
- **what Yamamura controls based on his measurement;**
- **whether or not Yamamura measures the preform diameter of the fiber drawing process as calimed invention and so on.**

These are indeed key characteristics that must be addressed and should not have been omitted in this inquiry (3). However, the O.A. fails to resolve these keys.

Because the O.A. ignores and omits the above key characteristics and questions, the O.A. fails to comply with *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966).

(2) **Yamamura teaches** outer diameter **measurements** above and below the heating, but both **in the furnace**. The measurement 6a in the furnace above the heating **controls the furnace temperature distribution within the heating furnace when a variation of a measurement of the outer diameter measuring device 6a exceeds a preset value** [refer to col.2, 64-67, col.3, L.1-3]. **The measurement 6b in the furnace below the heating is for a relative glass ingot stretch control** [refer to col.2, L.55-59].

(3) Yamamura clearly does **NOT** teach a step of measuring the outer diameter of final glass ingot, at best a preform, after inevitable shrinkage in his process. So, no measurement is after and outer the furnace. His last measurement 6b of glass ingot is in furnace 10 **as shown**

in Yamamura's Figs. 1 and 5.

(4) Of course, Yamamura does **NOT** teach the measurement for the fiber drawing process.

(5) **Thus, Yamamura is obviously teaches away from the applicant's claimed present invention** of the robust diameter controlled optical fiber drawing process **in the ways what to be measured, where to do measuring, how to use the sponsoring data, what to be controlled, and how to control**.

(6) **Thus, from the above facts and evidence, how can ordinary skill, at the level including monitoring what is put into a process from what Yamamura teaches or suggests, achieve the claimed invention?**

- **It is clear that the ordinary skill is taught away from the claimed invention. The claimed invention is unobvious over the prior art.**
- **Thus, the O.A. fails to follow MPEP 706.02(j)**:

MPEP 706.02(j) states:

> To establish a *prima facie* case of obviousness, **three basic criteria must be met**. **First**, there must be some **suggestion or motivation**, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second**, there must be **a reasonable expectation of success**. **Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations**. The **teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure**. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See 706.02(j) See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria. [emphasis added]
>
> "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious **in light of the teachings of the references**." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

- **The O.A. fails to follow the above cited MPEP 706.02(j) and court decisions because there is no motivation for examiner's proposed combination of Urruti and Yamamura which is inoperable, because the combination has no expectation of success, because the**

references teach away, and because the prior art references do Not teach or suggest All the claimed limitation, as listed and stated in above items.

- **Because the reference teaches away, Examiner fails to "present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references" as required in** *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) **by the MPEP 706.02(j).**

- **The O.A. fails to follow MPEP 2141.02 because the O.A. fails to address the above listed facts including the evidence that Yamamura teaches away from the claimed invention as listed in above (1)– (6).**

MPEP 2141.02: PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)

II.1.7. The O.A. fails to consider objective evidence present in the application indicating nonobviousness.

The O.A. [p.16, L.9-10] **incorrectly states** "Applicant has not provided any objective evidence. All evidence appears to be subjective."

Applicant has provided a lot of objective evidences to show non-obviousness in his Replies of 10-18-2004, 4-7-2005 and 5-10-2005, such as listed below for highlight, especially 4-7-2005 and 5-10-2005 Replies have specifically addressed combination of Urruti and Yamamura in view of the evidence of the references. For details, please see the Replies of 10-18-2005, 4-7-2005, 5-10-2005, and 9-6-2005 [pp.34-42, 56-59, 74-79, 100-102]. **However, Examiner has not considered them as required by the Rules and Office Policy.**

- **It is the objective evidence as listed in above II.1.4 that Urruti in view of Yamamura still lacks the claimed key features listed in above II.1.4.**

- **It is the objective evidence as listed in above II.1.2 in view of the references cited by the O.A. that the proposed combination of Urruti and Yamamura is inoperable.**

- **"It is a well-known and clear fact that fiber manufacturing has two major distinct processes, i.e., the preform manufacturing and the optical fiber drawing. They are totally separated processes and not combined due to a lot of technical difficulties.** Please refer to the prior art." [4-7-2005 Reply, p.43, L.15-18, B.3.6; p.46, L.24-27, C.2.4] [emphasis added]

  It is the objective fact and evidence that the preform manufacturing and the optical fiber drawing process are totally different and separated processes in the optical fiber manufacturing in the world.

- **Furthermore, it is objective fact and evidence that there is no motivation from the reference teaching or suggestion or the knowledge generally available to one of ordinary skill in the pertinent art to combine the reference teachings.**

- **It is a fact that the O.A. fails to follow MPEP 2145Ⅲ, MPEP 2143.01, MPEP 2143.03, MPEP 706.02(j), MPEP 2141.02, and the court decisions as listed above in items II.1.1** [pp.12-13], **II.1.3** [pp.15-16], **II.1.4** [pp.16-17], **II.1.6** [pp.18-21].

  MPEP 2143.01: The proposed modification can not change the principle of operation of a reference.

  However, the O.A. does not comply with this Rule, the court decisions and the MPEP policy because the proposed modification or combination changes Uruti's operation principle stated in col. 3, lines 40-57 and Figure 5, and no preform diameter measuring step in his process and Figure 5.

  MPEP 2143.01 THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE

  If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)

  The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.

- **Moreover, the proposed combination case of Urruti in view of Yamamura does not**

meet all three basic criteria as required by MPEP 2142. The O.A. fails to establish a *prima facie* case of obviousness because the proposed combination is inoperative, destroys the both references processes, and the proposed combination still omits the applicant's claimed key steps.

MPEP 2142 ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As pointed out, there is no suggestion or motivation to modify or combine the references teachings in the references themselves or in the knowledge generally available to one of ordinary skill in the art.

Second, the O.A. proposed combination will not have a reasonable expectation of success because the combination is inoperative and destroys both processes.

Third, when combined, the resultant references teachings still do not teach or suggest all the claim limitations, such as listed in II.1.4 above.

Thus, the O.A. fails to establish a *prima facie* case of obviousness because the O.A. fails to meet three basic criteria that must be met as MPEP 2142 states.

II.1.8. Therefore, based on the above objective facts and evidences, the court decisions and the Office policy MPEP, Applicant submits that the rejections on these references are improper and should be withdrawn. Claim 30 is patentable over the prior art.

II.2. Claim 21 is Unobvious and Patentable Over Harding 4793840.

The O.A. is in error and the grounds for rejections on Harding are in error because the O.A. fails to establish a prima facie case of obviousness, the reference Harding does NOT teach or suggest the applicant's claimed key steps in Claim 21, moreover, the

action and grounds distort the reference, are against the facts, and do not follow the 35 USC 103, Rule in Graham v. John Deere, court decisions, and MPEP policy 706.02(j), 2141, 2141.02 and 2143.03, as pointed out in 9-6-2005 Reply and highlighted below.

II.2.1. There is no motivation from the reference teaching or suggestion or in the knowledge generally available to the ordinary skill in the pertinent art to modify the reference to achieve the claimed invention.

- **The O.A.** [p.7, L.23-25; p.8, L.1-3] **shows that there is no any motivation for ordinary skill to do any modification on the reference further.**
- Furthermore, the O.A. states "Clearly, the Harding process is effective in the presence/face of the deviations" [p.10, L.5-6]. **So, where is the motivation for the O.A. suggested modification from? Where is the knowledge generally available to the ordinary skill in the pertinent art to modify the reference to achieve the claimed invention?**
- **Harding has no any teaching or suggesting for any modification to do the present invention as claimed in Claim 21. Therefore, there is no any motivation from the reference teaching and suggesting for the ordinary skill to do modification. It is objective evidence and shows that the present invention claimed in Claim 21 is nonobviousness.**
- **There is no any motivation in reference Harding and in ordinary skill from the reference teaching or suggesting to do the claimed present invention.**
- Thus, **the O.A. fails to "present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious *in light of the teachings of the references*" as required in** *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) **and the MPEP 706.02(j).**

II.2.2. There is no any teaching, suggestion, or motivation for modifying features of the references. Therefore, the rejection is as being based on hindsight from the piece of the present invention. It is Not permitted by Office policy MPEP 2141 BASIC CONSIDERATIONS WHICH APPLY TO OBVIOUSNESS REJECTIONS, specifically its

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention.

II.2.3. The O.A. fails to ascertain the major differences, specifically the control principles, between the prior art and the claims at issue, as required in inquiry (2).

- **The O.A. fails to** ascertain that Harding's control principle lacks the claimed process control principle in Claim 21:

  the drawing process is controlled by "the measured outer diameter or shape of said preform, the measured outer diameter of said optical fiber, a predetermined nominal preform value and a predetermined nominal fiber value".

- Harding's preform feeding speed is set to a particular rate and is slowly adjusted to maintain long term of the preform feed drive if the measured capstan speed [fiber drawing speed] is at a stable speed slightly different from a pre-calculated speed.

- However, Harding's control system does not adjust its preform feeding speed based on the measurement of the preform and a predetermined nominal preform value.

- The O.A. fails ascertain the important difference between an average diameter value of a preform and "the outer diameter or shape of a preform" in the respective processes.

- **The average diameter hides variations and deviations. However, variations and deviations are inevitable.**

- The fact is that variations and deviations of the preform diameter or shape affect the optical fiber drawing process, especially the process stability.

- What Harding uses "an earlier measurement" "average diameter" of the preform for is to calculate beforehand **"a nominal or preset speed" of the fiber drawing speed**.

  Harding [col.3, L.7-13] teaches: "The capstan speed however is greater than the nominal or preset speed which has been calculated beforehand based on data decrived from an earlier measurement on the preform e.g. average diameter, length and weight, and we have found that it is important not to deviate by more than ±5% of the preset values."

- It is clear evidence from Harding's sole figure and Specification that his process does not have a measuring preform diameter or shape step for the process control. What his process required from "an earlier measurement on the preform e.g. average diameter, length and weight" before the process control is only for a nominal or preset fiber drawing speed.

II.2.4. Harding's process lacks the key steps and control principle claimed in Claim 21 as recited below. Examiner fails to point out where Harding teaches or suggests that his control system needs both the nominal preform value and the measured preform value for his control principle. Harding teaches away from the claimed invention.

Claim 21 recites: "measuring either the outer diameter or shape of a preform; ...
providing a control system with the measured outer diameter or shape of said preform , the measured outer diameter of said optical fiber, a predetermined nominal preform value and a predetermined nominal fiber value for controlling said drawing process,
wherein the control system controls feeding speed of said preform and drawing speed of said optical fiber; ..."

- Harding's teaching is to use only average preform diameter, length and weight for calculating beforehand the nominal fiber drawing speed only! It is clear fact and evidence that Harding teaches away from the claimed invention. [Harding col.3, L.7-13, and see above II.2.3]
- Harding's control system clearly lack the limitation of providing both preform measurement and the predetermined nominal preform value for controlling the process, that is one of the control principle in the claimed present invention.
- **Thus, the O.A. fails to follow court decision and MPEP 2141.02**:

MPEP 2141.02: PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)

II.2.5. The O.A. fails to follow the MPEP 2143.03 and the following court resolutions, *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). The O.A. distorts the reference Harding by alleging the same robustness. The objective evidence that Harding lacks teaching or suggesting the key features in Claim 21 [as recited above] **shows that the claimed invention is unobvious and patentable over the references. Thus, the O.A. is in error in answer to inquiries (2) and (3).**

MPEP 2143.03 All Claim Limitations Must Be Taught or Suggested

To establish *prima facie* obviousness of a claimed invention, **all the claim limitations must be taught or suggested by the prior art**. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). [emphasis added]

- The O.A. [p.9, L.5-9] wrongly states:

  "In view of the four inquiries, it is deemed that the invention is obvious as follows: Although inquiry 2 reveals that there is no indication whether these measurements/ calculations are done by hand or by machine, this is not important – because inquiry 3 reveals that proving an automatic apparatus is a routine and obvious practice."

- The above O.A. statement is in error because the following facts and the reasons:

  (a) The O.A. does wrongly in inquiries 2 and 3 as pointed out in 9-6-2005 Reply, II.1.2—1.3;

  (b) The objective fact is that Harding does NOT teach or suggest providing both measured preform value and a predetermined nominal preform value to the control system for controlling said optical fiber drawing process either by machine or by hand;

  (c) Examiner further uses his wrong reasoning "this is not important – because inquiry 3 reveals that providing an automatic apparatus is a routine and obvious practice".

  (d) Because Harding's process lacks the claimed key steps and manipulations as listed above, it is a lack either by hand or by machine.

  (e) Because Harding's process lacks these key steps and manipulations, the automatic apparatus completing Harding's manipulations still lacks these key steps and manipulations.

  (f) If hand manipulations lack the above key steps, its automatic apparatus copying the hand manipulations, of course, still lacks the above key steps.

  (g) Thus, it is a clear fact that the O.A. does the above listed wrong statement and action.

Thus applicant submits that the rejection on Harding is improper and should be withdrawn.

II.2.6. The O.A. just cuts a piece and words from Harding 4793840 and distorts the Harding's contents, control principle, motivation and work as pointed out below.

(1) The O.A. distorts Harding process by the statements [p.9, L.10-18] and omitting the significant and distinguished differences of the control systems; e.g., O.A. [p.9, L.10-12] "In this case, it would have been obvious to one of ordinary skill to perform the Harding process, by using a completely automatic machine to do the steps that Harding discloses, namely the measuring, calculating, etc."

- Because the distinguished differences between Harding's process and the claimed present invention, "one of ordinary skill to perform the Harding process, by using a completely automatic machine to do the steps that Harding disclosures, namely the measuring, calculating, etc." [O.A. p.9, L.10-12] is NOT executing the claimed invention process that has distinguished different steps from Harding's process.
- It is clear from the Harding's sole figure and his specification that Harding's measuring and calculating are totally different from the claimed invention.
- Harding's process clearly lacks controlling his preform feeding speed and fiber drawing speed by measuring the preform diameter or shape and providing the measured preform value in addition to a predetermined nominal preform value. These differences are the difference of control principles between Harding's process and the claimed invention.
- Because Harding never teaches or suggests the above principle, how examiner can allege his statement on page 9, lines 12-14?

(2) The O.A. [p.7, L.15] states "Measuring outer diameter or shape step: See col.3, lines 10-11."

However, Harding col.3, lines 10-11 is not a whole sentence and is just a piece of a sentence. Harding's full sentence is at lines 7-13.

As the fact, the sentence [col.3, L.7-13] reads "The capstan speed however is greater than the nominal or preset speed which has been calculated beforehand based on data decrived from an earlier measurement on the preform e.g. average diameter, length and weight, and we have found that it is important not to deviate by more than $\pm 5\%$ of preset values."

More important is the fact that the O.A. further fails to determine an important content in a

sentence, col.3, lines 6-7 which represents Harding's process principle regarding preform feeding rate. That sentence is just before the above cited sentence [col.3, L7-13].

It is that "The preform will be feeding glass at a particular rate, i.e. so many h[k]ilograms per hour" [Harding col.3, L.6-7]. The above cited sentence reflects Harding's motivation for an earlier measurement on the preform average diameter and how Harding uses this earlier measurement – i.e., for pre-calculating the nominal or preset capstan speed (i.e., fiber drawing speed) only.

(3) O.A. [p.7, L. 20-21] wrongly states "The control at lines 12-14 (of Applicant's line 21): it is clear from Harding's sole figure that both of the claimed control speeds are disclosed."

However, Examiner clearly fails to determine Harding's control principle and method that are key important to control/manipulate Harding's optical fiber drawing process, which are totally different from the present invention in view of the features as claimed, e.g., Claim 21 recites:

> "providing a control system with *the measured outer diameter or shape of said preform*, the measured outer diameter of said optical fiber, a predetermined nominal preform value and a predetermined nominal fiber value for controlling said drawing process,
> wherein the control system controls feeding speed of said preform and drawing speed of said optical fiber"

(4) **Applicant respectfully requests Examiner to determine the following scope and contents of the prior art as required according to the Rule and the Policy:**

- How does Harding control the preform feeding speed and fiber drawing speed?
- Does Harding's invention have a preform monitor to measure the preform in his process and in his sole figure?
- Does Harding's invention adjust the preform feeding speed and the fiber drawing speed based on the preform measurement?
- Does Harding's process control the preform feeding speed and the fiber drawing speed based on the deviation of the preform measurement from a predetermined preform nominal value?

(5) **The O.A. wrongly states** "Clearly, the Harding process is effective in the presence/face of the deviations" [page 10, L.5-6] **because Harding process can not be effective in the presence/face of the large deviations of the preform diameter.**

Especially the fact and evidence is from Harding's conclusion that "it is important not to deviate by more than ±5% of the preset values" [see col.3, L.7-13].

It also can be seen from the objective evidence: what Yoshimura (1990) teaches is to limit preform diameter change [col. 3, L.30-39] "the outer diameter of the optical fiber depends on a preform diameter, structural factors of the drawing furnace such as a heating length, a size of the furnace outlet, and a flow rate and a kind of an inert gas. **Thus, the present invention resides in not only limiting** the distance between the outlet or a center of the drawing furnace and the measuring device for the outer diameter **but also, as a whole, limiting such factors described above.**" [emphasis added]

This objective evidence further proves that the claimed present invention is unobvious over the prior art including Harding and Yoshimura.

(6) **The O.A.** [p.7, L.23-25; p.8, L.1-3] **wrongly states** "It is deemed that the Harding's process had robust control and robust quality compared to the standards of 1986 (the year of Harding's invention): see col. 1, lines 27-29. Also, since Harding does the same thing that Applicant does, Harding should also have an equally robust process. As to the deviations: see col.2, lines 56-58 and col. 3, lines 1-20 which reasonably suggest that deviations in preform are not detrimental to the process." [emphasis added]

The above O.A. statements are totally wrong and in errors because of the following objective evidence, facts and reasons:

Harding's Specification Never mentions "robust control" and "robust performance".

Harding's col. 1, lines 27-29 is "It is an object of the present invention to provide an improved arrangement for maintaining precise control of the optical fibre being drawn."

Harding's process lacks the following feature steps as claimed in Claim 21, thus Harding does not do the same thing that Applicant does in applicant's process:

"measuring either the outer diameter or shape of a preform";

"providing a control system with the measured outer diameter or shape of said preform , the measured outer diameter of said optical fiber, a predetermined nominal preform value and a predetermined nominal fiber value for controlling said drawing process;"

"wherein the control process system controls feeding speed of said preform and drawing speed of said optical fiber" from the above providing.

The robust control and robust performance described in the present invention are clearly stated in Claim 21 as recited below:

"whereby said optical fiber drawing process robustly controlled with robust performance of said process and robust quality of said optical fiber against deviations of the preform outer diameter or shape at different locations and against deviations of various preforms, making a robust diameter-controlled optical fiber." [Claim 21, L.14-17]

This specific robustness is lacked by the prior art including Harding's process, because their processes lack measuring preform and a control principle based on the measured preform value and a predetermined nominal preform value.

Harding's process does not have the robust performance as recited above because of his lack of measuring the preform in the process, providing the preform measurement for the control, and the corresponding control as claimed in Claims 21-22 and 24-25.

Thus, the O.A. statement, that "Also, since Harding does the same thing that Applicant does, Harding should also have an equally robust process", not only distorts the reference Harding, but also distorts the present invention. Moreover, the fact is that Applicant's process distinctly and patentably differs from Harding's process, such as claimed in Claims 21-22 and 24-25 in view of applicant's figures 1-8 and Harding's figure.

The Examiner's rejection on the above O.A. statements is wrong because the robustness in face of deviations of the preform is an advantage of the present invention over Harding.

The fact is that the deviations in preform are detrimental to the process if the process has no measuring preform diameter or shape and the corresponding control as recited in Claim 21.

The O.A. statement "As to the deviations: see col.2, lines 56-58 and col. 3, lines 1-20 which reasonably suggest that deviations in preform are not detrimental to the process" [O.A. p.8, L.1-3] is also against the 2-14-2005 O.A., p.6, last two lines, regarding Yoshimura.

(7) The robustness against deviations of the preform outer diameter or shape at different locations and against deviations of various preforms, making a robust diameter-controlled optical fiber, is new advantage of the present invention. **The advantage of that and new control principle as claimed in Claim 21 urge to warrant issue of a patent over Harding, Yoshimura and the prior art.**

(8) **According to the examiner's logic to the present invention, how to explain the issue of Yoshimura 5073179 which is examined by the same examiner?**

On the other hand, Applicant highly honors and respects Yoshimura's invention by moving the bare fiber diameter monitor position downward from Harding's process.

(9) **How to locate measurement monitor location is a challenging problem, especially in a complex process control, such as an optical fiber drawing process.**

At the same time, Applicant again respectfully request the PTO to recognize and honor the present invention patentably distinguished from the prior art.

II.2.7. The O.A. statements [p.10, L.18-21; p.11 L.1-3] **are in error because they distort the Harding process by stating "As to the control system: it is clear that Harding's system generates signals for the purpose of controlling drawing speed – and it is 'based on' everything including inconsequential stuff like the gravity from the moon."**

- **Applicant respectfully requests the PTO has a reasonable and fair examination on the present invention again.**
- **However, Examiner's Action is again unreasonable on the application and again does distortion on the references for the rejection to the application, e.g., in view of the above cited O.A. statement.**
- **The O.A. fails to recognize Harding's process control is Not based on the preform diameter measurement, when examiner states that** "For example, if Harding's average diameter was 10 cm, then almost the entire process would be different from a process where the diameter is 15 cm. Harding's process is inherently based on every one of the claimed parameters." [p.10, L.20, p.11, L.1-3].

Furthermore, Harding's process will not be stable if Harding's preform average

diameter is 10 cm and the preform diameter is 15 cm, and its optical fiber product quality will be out of control because the following reasons and the facts:

- **Harding's control system lacks the diameter measurement 15 cm of the preform for the control;**
- **Harding's process uses 10 cm average diameter of the preform only for the beforehand calculated normal or preset capstan speed;**
- **The preform feeding speed and the fiber drawing speed are not controlled based on both the preform diameter and the nominal preform value in Harding's process.**

- **The O.A. fails to observe the evidence that Harding's control law for preform feeding speed is not based on every one of the claimed parameters, such as the preform diameter measurement.** Please see Harding col.2, L.54-68 and col.3, L.1-20. **The Harding's fiber drawing speed is also Not based on the preform measurement.**
- **The O.A. statement is against the Harding's teaching** [col.2, L.54-68, col.3, 1-20].

Because the O.A. is in error as pointed out above, Applicant submits that the rejection on Claim 21-22 and 24-25 should be withdrawn.

II.2.8. The O.A. fails to consider objective evidence presented in the application indicating nonobviousness.

- **Examiner** [p.9, L.3-4] **incorrectly states** "Applicant has not provided any objective evidence. All evidence appears to be subjective."
- **Applicant has provided a lot of objective evidences to show non-obviousness in the 10-18-2004, 4-7-2005 and 5-10-2005 Replies during the application process.** (see 9-6-2005 Reply, II.1.4)

  For example, please see 10-18-2004 Reply: IV.A.3 [p.20], A.5 – A.7 [pp.22-27], C.1 [p.29], C.3 [p.29], C.6 [p.30], C.14 [pp.34-35], VII.A [pp.45-46], B [p.46], F–I [pp.46-47]; 4-7-2005 Reply: III.D.4 [pp.56-59], III.D.9–14 [pp.60-61]; 5-10-2005 Reply: I.4 [pp.18-19], I.11 [pp.24-26], III.8 [pp.55-56], etc.
- **However, Examiner has not considered them as required by the Rules and Office Policy.**

- **Here, applicant further provides more objective evidence indicating non-obviousness over Harding.**

  In view of the reference evidence, Harding's process lacks the preform measurement in his control system, wherein Harding's control system input has only fiber measurement, "a particular rate" of the preform feeding, and a "nominal or preset capstan speed calculated beforehand" as described in his specification [col.3, L.1-20] and **his sole Figure.**

  Please also see the objective evidences listed in the items of this Reply and 9-6-2005 Reply.

II.2.9. Thus, the O.A. fails to comply with the MPEP 706.02(j) and the court decisions because Neither the references expressly or impliedly suggest the claimed invention **Nor** the examiner presents a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

MPEP 706.02(j) states the followings:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.
>
> "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

II.2.10. The O.A. does not comply with the MPEP 2141 as cited below, and the rejection based on Harding is not justified and should be withdrawn.

MPEP 2141 BASIC CONSIDERATIONS WHICH APPLY TO OBVIOUSNESS REJECTIONS

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

(A) The claimed invention must be considered as a whole;

(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

(D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

- **The O.A. fails to comply with the above rules as shown below.**

The O.A. fails to consider the claimed invention as a whole and to consider the reference Harding as a whole, but just cuts words or phrases from sentences to make the false or wrong and unreasonable statements.

Harding's teaching and suggestion as a whole is clearly different from the claimed invention, and Harding does not suggest an ordinary skill in the art to do claimed invention. Please refer to Harding col.2, lines 54-68; col.3, lines 1-20. For example, Harding's process lacks the key features as listed above items II.2.3 – II.2.5.

In whole, Harding's process lacks the new control principles in the present invention.

The O.A. fails to comply with that "the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention".

- **The rejections based on Harding should be withdrawn.**

II.3. Claim 26 is Unobvious and Patentable Over Yoshimura 5073179 in view of Urruti 5551967. The examiner's action and grounds for rejections are in error because his action and grounds distort the reference, are against the facts, and fail to follow the 35 USC 103 and the Supreme Court Rule in *Graham v. John Deere*, and MPEP policy as pointed out below.

II.3.1. The O.A. statement [p.12, L.3-11] **distorts both Yoshimura's and Urruti's teachings and operation principles, makes wrong statement on Yoshimura's teaching, fails to respect the facts and objective evidence in the references. The obvious missing and**

distorting the facts and failing to comply with the Rule and the policy in the O.A. are improper. Thus, applicant submits that the rejection on that should be withdrawn.

(1) **The O.A. makes a wrong statement on Yoshimura's teaching by stating** "that one can have one sensor very close to the furnace so as to reduce lag time – which is the same desire that Yoshimura has: getting the sensor close to the furnace" [p.12, L.5-6]. [emphasis added]

The evidence and fact is from Yoshimura's Abstract [L5-11] **that** "wherein an outer diameter of the optical fiber on which no coating has been provided is measured at a position at which shrinkage of the outer diameter of the optical fiber, while stretched, is not larger than 0.5% and drawing conditions are controlled based on the deviation of the measured diameter from a preselected outer diameter".

Therefore, Yoshimura is NOT getting the sensor close to the furnace, but is getting the sensor away from the furnace as Urruti comments on Yoshimura.

Urruti also cites Yoshimura and comments that "This observed increase in measured diameter with increased tractor speed has also been reported in Yoshimura et al., U.S. Pat. No. 5,073,179. Yoshimura's response was to take the obvious step of simply moving the diameter measuring equipment further from the furnace as the speed increased" [col.3, 16-21]. [emphasis added]

Yoshimura's Abstract [L.5-11] **and Urruti's Specification** [col.3, L.16-21] **are objective evidence that clearly shows the fact that the O.A.** [p.12, L.5-6] **makes the wrong statement on Yoshimura's desire and teaching.**

(2) **The O.A.** [p.12, L.3-11] **further distorts both Yoshimura and Urruti's teaching and operation principles by having two sensors monitoring/measuring the bare fiber in the proposed combination because the prior art references principle is to measure the bare fiber at only one location.**

Thus, the O.A. fails to comply with the court decision and MPEP 2143.01.

MPEP 2143.01 THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not

sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)

The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.

(3) **Yoshimura and Urruti both have No double measurements on the bare fiber in their processes. That is the fact. Their combination would still measure the bare fiber from only one location at any time for the control system according to both Yoshimura's and Urruti's Control Principles in their Figures** [Yoshimura's Figure 1-3 and Urruti's Figures 1 and 5].

(4) **Examiner's wrong concept is that "with any process, the more locations the product is monitored, the better the final product would be"** [2-14-2005 O.A. p.12, L.10-11].

However, the above concept is incorrect and against the fact, knowledge and principles of automatic control and engineering.

Please see 4-7-2005 Reply for details in item D.4 [pp.56-59]. The brief reasons are:

- Only monitoring will not improve the product and will not get the better product. It may observe and find more defect information, but will not solve it by more monitoring itself.
- The better product must be through better control method and system, not by only more monitors.
- The manufacturing process control is not a pure monitoring system, but a control system. Thus, the concept "With any process, the more locations the product is monitored, the better the final product would be" is wrong.
- Even assume that more monitoring would connect with a control system for a product process control, the above concept "the more ..., the better ..." is still incorrect for the following reasons.
- Let's assume that the data from the above more monitoring locations are input to a control system to control the product quality. A big question and a disaster difficulty is how the control system can handle the More and More data from the More and More monitoring

locations dynamically and make a correct command/decision in a limited time for a real-time process control.

- No control system can handle a "data sea" in a required short time period to make an on-line real-time correct action.
- Another simple question is: how does one store or arrange the measured/measuring data ("data sea") from the more and more monitoring locations for further treatment? What kind size of computer does one need for it? No amount of hardware advances will overcome this conceptual fundamental impossibility.
- How long of time does one need to treat one cycle of data from all monitoring locations that are more and more?
- On the other hand, the more and more monitors would also be uneconomical utilization of resources.
- Thus, what is an optimal monitoring system in a control system? Where are optimal monitoring locations? What is a best suitable control law in a complex control system? These problems are the open and challenging problems in complex control systems, e.g., the well-recognized complex optical fiber drawing process.
- Accordingly, applicant respectfully submits that the rejection on this O.A. statement and these references is improper and should be withdrawn.

(5) **The O.A.** [p.12, L.3-11, 17-18] **fails to identify the important key, i.e., how Urruti locates the sensors rather than simple more sensors, such as two, to make Urruti's "dramatic improvement", because just having two sensors May Not "obtain 'dramatic improvement'" in optical fiber drawing process. <u>One key is how to locate the sensor or sensors at suitable/optimal locations</u>.**

(6) **The fact is that Urruti and Yoshimura both have No double-sensor measurements on the bare fiber in their processes.**

However, in both inquiries (2) and (3), the O.A. fails to point out this important fact and the another fact that Urruti's <u>second sensor location is after the coating</u> and his

important teaching about his second sensor technique – shadow gauge. Please See Urruti, col.1, L.40-67; col.2, L.60-67; col.3, L.7.

(7) **This kind of distorting or omitting the important operation principles of the references and the important differences of the claimed invention from the references as pointed out above is improper.**

(8) **Because of the above pointed out errors in the O.A., the O.A. statement** [p.12, L.3-5], "The level of skill of the theoretical 'one of ordinary skill' includes the knowledge contains in Urruti: that one can obtain 'dramatic improvement' by having two sensors, and that one can have one sensor very close to the furnace so as to reduce lag time – which is the same desire that Yoshimura has: getting the sensor close to the furnace", **is incorrect.**

(9) **The O.A. statement** [p.12, L.7-8], **that "Urruti achieve this goal by having two sensors – and has achieved 'dramatic improvement' in control col. 3, lines 64-67", fails to determine the important sensor location of Urruti's second sensor and the technique associated with the second sensor.**

This O.A. statement also shows that no any motivation to modify or combine Urruti and Yoshimura because Urruti "has achieved 'dramatic improvement'" and Yoshimura is a Urruti's cited and commented reference.

(10) **The O.A. statement** [p.12, L.8-11] **states** "It is noted Urruti was able to place the first sensor at a location much close to the furnace – where the fiber still had 4% shrinkage left".

However, applicant could not find where "4% shrinkage left" is from the reference Urruti or Yoshimura [See col. 5, lines 8-20 of Yoshimura].

(11) **The O.A. statement** [p.13, L.12-20] **is in error because the statement distorts Urruti's teaching by stating** "Claim 28: figure 5 disclose a controller for glass feed in the upper right corner. It would have been obvious to measure the preform so that one will know how fast one should feed the glass".

- **Figure 5 of Urruti clearly shows the fact that** glass feed controller is controlled based on a fiber drawing SPEED TARGET compared with a fiber drawing speed from another controller which is based on the fiber diameter target and his one IDM measurement on a bare fiber and one Shadow Gauge measurement on a coated fiber. **There is no any preform diameter**

measurement in Urruti Fig. 5.

- This fact and objective evidence shows that examiner's Action clearly distorts the reference Urruti's process and teaching, especially Urruti's control Principle.
- This objective evidence clearly shows that the claimed present invention is unobvious.
- **Urruti's preform feed speed is indeed controlled by the deviation of the fiber drawing speed from its speed target.**

  In col. 2, L.36-38, Urruti clearly states that "The overall control loop used is shown in FIG. 3. As shown in this figure, the control system employed both a target draw speed and a target fiber diameter".

  In Fig. 5, the glass feed part is the same as the corresponding part in Fig. 3 as Urruti states in col. 5, L.39-41, that "Thereafter, control of the drawing process based on tractor speed and preform feeding is the same as in FIG. 3."
- **This obvious evidence clearly shows that the claimed invention is unobvious over the references.**
- **The O.A.** [p.13, L.14-20] **many times states the concept of conservation of mass and then rejects the present invention. However, it is in error, because the concept of conservation of mass does not reject inventions, such as Yoshimura and Urruti and the present invention.**
- **The O.A. statement** [p.13, L.14-20] **is incorrect because one can weight the preform to get the preform mass without any one measurement of the preform diameter.**
- **The O.A. statement** [p.13, L.14-20] **still disregards the claimed control principle.**

(12) **Furthermore, the facts are that the prior art before Yoshimura sets the only one bare fiber sensor measurement close to the furnace, and Yoshimura moves it away from the furnace, and Urruti adds a second sensor using Shadow gauge after coating for a coated fiber measurement.**

(13) **The action to omit the facts of the key features and differences, i.e., where and how Urruti's second sensor works, is improper.**

(14) **Accordingly, applicant respectfully submits that the rejection on these statements** [p.12, L.3-11, 15-18, p.13, L.12-20] **and these references is improper and should be withdrawn.**

II.3.2. The objective evidence is that there is no motivation from the reference teaching or suggestion for the ordinary skill in the pertinent art to do combination. The O.A. fails to consider the court decisions, MPEP 706.02(j), 2141, 2143.01 and objective evidence present in the application indicating nonobviousness, e.g., as listed in II.3.1 and below.

- **MPEP 706.02(j) states the followings:**

  To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. **The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure**. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See 706.02(j) See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria. [emphasis added]

(1) **Yoshimura and Urruti have no any teaching or suggestion for their combination as suggested by the O.A. Urruti does not teach or suggest any combination with Yoshimura. Moreover, Urruti's process is invented after Yoshimura's invention and clearly cites Yoshimura. Thus, it is clear that one of ordinary skill has no any motivation to do the proposed combination.**

(2) **There is no reference teaching or suggestion to combine Yoshimura and Urruti. There is no any teaching or suggestion or general knowledge for their combination. Thus, the fact, that examiner suggests a combination of Yoshimura and Urruti, shows that examiner is viewing the references with the benefit of impermissible hindsight vision afforded by the claimed invention.**

(3) **The statement in the O.A.** [p.12, L.7-8] **shows that there is no any motivation for ordinary skill to do any modification on the reference further because the O.A. states "Urruti achieves this goal by having two sensors – and has achieved 'dramatic**

improvement' in control col. 3, lines 64-67".

(4) **Thus, the O.A. does not comply with the MPEP 2141 as cited below, and the rejection based on Yoshimura and Urruti is not justified and should be withdrawn.**

MPEP 2141 BASIC CONSIDERATIONS WHICH APPLY TO OBVIOUSNESS REJECTIONS

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

(A) The claimed invention must be considered as a whole;

(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

(D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986). "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See 706.02(j) See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria".

(5) **From Urruti's teaching or suggestion as he has done on Yoshimura, the O.A. statement** [p.12, L.17-18] **should reach to Urruti's invention as Urruti has done to have a second sensor measuring the coated fiber by using Shadow technique. Urruti and Yoshimura both do Not have any teaching or suggestion on double measurements on the bare fiber.**

The O.A. statement [p.12, L.17-18] fails to point out "two diameter sensors" locations which Urruti teaches in his invention. It is well known that sensor locations are a very challenging problem in control area. The O.A. wrongly omits this important feature, distorts the fact and the references, and fails to follow the Rule, court decisions and MPEP 2143.01 as cited above. [Refer to above II.3.1(2),(5)]

(6) **Thus, the O.A. fails to comply with the following court decisions and fails to provide the basis for ordinary skill to have a general available knowledge and any motivation for their combination.**

- It is well known that in order for any prior-art references themselves to be validly combined for use in a prior-art 103 rejection, "teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure" [*In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)], and the *references themselves* (or some other prior art) must suggest that they be combined, e.g., as was stated In re Sernaker, 217 USPQ 1,6 (CAFC 1983):

  "[P]rior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings."

- That the suggestion to combine the references should not come from applicant was forcefully stated in Orthopedic Equipment Co. v United States, 217 USPQ 193, 199 (CAFC 1983):

  "It is wrong to use the patent in suit [here the patent application] as a guide through the maze of prior art references, combining the right references in the right way to achieve the result of the claims in suit [here the claims pending]. Monday morning quarterbacking is quite improper when resolving the question of nonobviousness in a court of law [here the PTO]."

- Applicant would further cite the following. As was further stated in Uniroyal, Inc. v. Rudkin-Wiley Corp., 5 USPQ2d 1434 (CAFC 1988),

  "[w]here prior-art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. ... *Something in the prior art must suggest the desirability and thus the obviousness of making the combination.*" [emphasis added]

- In line with these decisions, the Board stated in Ex parte Levengood, 28 USPQ2d 1300 (P.T.O.B.A.&I. 1993):

  "In order to establish a *prima facie* case of obviousness, it is necessary for the examiner to present *evidence*, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art, or in the form of generally available knowledge, that one have ordinary skill in the art *would have been led* to combine the relevant teachings of the applied references in the proposed manner to arrive at the claimed invention. ... That which is within the capabilities of one skilled in the art is not synonymous with obviousness. ... That one can *reconstruct* and / or explain the

theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless that logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention. ... Our reviewing courts have often advised the Patent and Trademark Office that it can satisfy the burden of establishing a *prima facie* case of obviousness only by showing some objective teaching in either the prior art, or knowledge generally available to one of ordinary skill in the art, that 'would lead' that individual 'to combine the relevant teachings of the references.'... Accordingly, an examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done."

(7) **It is not obvious and no motivation to take more than one measurement of the bare fiber from the prior art prior to the present invention. Otherwise, it would have been mentioned in either Yoshimura or Urruti or Kohei.**

(8) **Thus, the O.A. fails to "present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references" as required in** *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) **by the MPEP 706.02(j).**

(9) **Accordingly, applicant respectfully submits that the rejection on these statements** [p.12, L.3-11, 15-18] **and these references is improper and should be withdrawn.**

II.3.3. The O.A. statement [p.14, L.10; p.15, L.1-3] **is in error because the proposed modification on Urruti by omitting the hermetic coating destroys the purpose of Urruti's invention and damages the product quality of optical fiber.**

- **This function is Desired and Required, thus the hermetic coating can not be omitted in Urruti 5551967.**

The hermetic coating is required "to reduce absorption of water and hydrogen into fiber" (Urruti, col. 1, L.39-40) for protecting the optical fiber from moisture.

It is a known fact that if this coating is omitted, it will cause a detrimental phenomenon called stress corrosion, i.e., static fatigue, and further cause bonds to break down and spontaneous fractures.

The fact is that water, hydrogen and moisture is around us in the Nature, and fiber

needs this coating that is a key step and can not be omitted in Urruti process.

However, the O.A. distorts the reference and the common knowledge by citing an only threat of water damage and omitting a threat of hydrogen damage or moisture damage in the O.A. statement [p.15, L.1-3]. Hydrogen is in the air. The hermetic coating is required.

The O.A. lacks the fact support to allege its statement [p.15, L.1-2] on Yoshimura to draw optical fiber without a hermetic coating. **Examiner fails to point out any specific Yoshimura's teaching to support examiner's allegation.**

Please see Yoshimura's teaching [col.1, L.16-24] for **the fact** that clearly shows that Yoshimura's coating is to protect "bare fiber" which "tends to be considerably damaged and influenced with moisture". "Therefore, the bare fiber is usually coated with an ultraviolet curable resin or a thermosetting resin in a resin coating device comprising, for example, a die, the resin is consequently cured in a resin curing device, and then the fiber is wound as a coated optical fiber."

From Yoshimura's teaching, his coating clearly should be a hermetic coating.

- **It further shows that the present invention claimed in Claim 26 is unobvious and patentable.**
- **Furthermore, there is no any teaching, suggestion, or motivation for omitting the hermetic coating in Urruti process. Thus, the rejection to Claim 26 is as being hindsight to build a new process with some key features as claimed in the present invention by omitting some required step and function, but at the same time to destroy the reference purpose and to damage the product quality.**

  Urruti teaches using a special shadow technique for monitoring this hermetically coated fiber as that "Since the fiber has been hermetically-coated at this point, the technique used for this measurement must be operable in the presence of such a coating. One suitable approach is the shadow technique employed in the commercial Anritsu monitor." [col. 4, L.63-67]

- **If this function were not desired and could be omitted, then Urruti would not have taught Anritsu device with the shadow technique, where "a tuning-fork is used to sweep a thin beam of light across the width of the fiber and the presence or absence of light at a detector as a function of time is used to locate the edges of the fiber's shadow"** [col. 5,

L.4-7], **and he would have used "IDM so as to provide high speed, sub-second data suitable for performing statistical calculations to ensure fiber quality as well as to provide information regarding defects in the fiber",** [col. 3, L.59-62] **in Urruti 5551967.**

But he had to sacrifice the advantage of IDM and to use the shadow technique because the hermetic coating is required and can not be omitted.

Therefore, in all, there is no any basis for the O.A. to cite "Omission of an Element and its Function is Obvious if the Function of the Element is Not Desired" in view of Urriti.

- **Moreover, even as modified to omit the hermetic coating as the O.A. suggested, the measurement technique for the second bare fiber measurement in the present invention is totally different from the shadow technique which Urruti uses. The regular bare fiber measurement technique in the present invention has advantage as Urruti recognized and cited above. This fact also shows that the present invention is Unobvious over Urruti.**

- **The disadvantages of the shadow technique and the advantage of IDM technique were clearly stated in Urruti 5551967 (col. 2, lines 46-54)** as follows:

  "By averaging a series of measurements, the *shadow technique* can provide diameter measurements of good accuracy. The average, however, needs to be made over a period of time on the order of a second which makes *this technique unsuitable for the high speed diameter measurements needed for process control. IDM*s, *on the other hand, are capable of providing high speed and high accuracy.* Also, they can be used *to detect fiber defects, a capability not shared by shadow measuring techniques.*"

- **Furthermore, the O.A. is in error by wrongly citing MPEP 2144.04 for the claims at issue in the present invention in view of the above facts and reasons. MPEP 2144.04 is not relevant to the claimed present invention because the step and function Is Desired and Required in optical fiber, otherwise damage the product and the process goal.**

- **Accordingly, applicant respectfully submits that the rejection on this wrong omitting and these references is improper and should be withdrawn.**

II.3.4. Moreover, the prior art reference (or references when combined) do Not teach or

suggest all the claim limitations. Thus, the O.A. fails to comply with the court decision and MPEP 2143.03.

- **MPEP 2143.03 All Claim Limitations Must Be Taught or Suggested**

  To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

- **Even if the combination were to be in the manner proposed, Yoshimura and Urruti would still lack one or more of the substantial manipulative features claimed, e.g.,**

  Claim 26 recites:

  "measuring the outer diameters of said optical fiber, which is bare before coating, at two or more different locations by respective measurement devices before the coating";

  "a second position location is below the first position location, at this second position location shrinkage of the outer diameter of said optical fiber, while stretched under the drawing, is not larger than a predetermined allowable bare fiber diameter deviation value of said optical fiber, or immediately before the coating";

  "providing a control system with the measurement data from all these measurement devices respectively at the different locations";

  "calculates the deviation of the measurement of the first measurement location from the first preselected nominal value, and the deviation of the measurement of the second measurement location from the second preselected nominal value";

  "dynamically controls a fiber drawing speed and a preform feeding speed for the drawing process based on the calculated deviations".

  Therefore, the O.A. statement [p.13, L1-3] is in error.

- **Accordingly, applicant respectfully submits that the rejection on these references should be withdrawn.**

II.3.5. Moreover, claimed new features make new and unexpected results as follows:

robustness to control the required bare fiber diameter against various disturbances, perturbations and deviations of the preform and preforms;

solving time-lead and time-lag measurement problem;

providing high speed, high accuracy data of the second measurement of bare fiber needed for high speed fiber drawing process control and defect detection over Urruti's shadow gauge;

reducing the processing time of Urruti.

II.3.6. Urruti cites Yoshimura and gets Urruti's invention that teaches away from the present invention of having double sensors measuring on the bare fiber as claimed in Claim 26. It is the fact that Urruti teaches using a second measuring on the coated fiber by using shadow technique [col.4, L.60-67]. **Yoshimura teaches moving his only sensor on the bare fiber away from the furnace** [col.2, L30-41].

MPEP 2141.02: PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)

MPEP 2145 X.D.2 states: References Cannot Be Combined Where Reference Teaches Away from Their Combination

It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983).

Based on MPEP 2141.02, 2145 X.D.2, and the fact of reference teaching away from the claim, it is clear Claim 26 is unobvious and patentable over Urruti and Yoshimura.

II.3.7. The O.A. statement [p.17. L.20 – p.18, L.2] **is in error, by stating** "It is noticed Urruti and Applicant teach the same thing: that using two diameter monitors results in a significantly more robust process (Urruti col. 2, lines 20-22)", **because of the following facts and reasons.**

- **The fact is that Urruti and Applicant Do Not teach the same thing** [see above II.3.6].
- **Urruti does NOT have <u>double diameter monitors on the bare fiber</u> as the claimed present invention,**
- **The important differences include the different locations of the second monitoring,**

different techniques, different control principles, and the reference lacking of preform measurement [in claim 28] **and double bare fiber monitoring** [in claim 26]**, in the claimed invention.**

- **The O.A. fails to point out the "two diameter monitors" locations which Urruti states in his invention and Applicant also states in the Specification. It is well known that sensor locations are a very challenging problem in control area.**
- **The O.A. statement also distorts both the reference Urruti as a whole and the present invention as a whole by ignoring the key differences and characteristics between the reference and the claims at issue.**
- Furthermore, **the O.A. statement fails to ascertain the differences between the prior art Urruti and the claims at issue as required by the Graham v. John Deere, 383 U.S. 1, 148 USPQ 459 (1966).**
- **The rejection on this kind of wrong statement violates the following court decisions and the Office policy MPEP 2141.02** [see above] **and 2141 that require to consider the references as a whole and the claimed invention as a whole.**

MPEP 2141 BASIC CONSIDERATIONS WHICH APPLY TO OBVIOUSNESS REJECTIONS

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

(A) The claimed invention must be considered as a whole;

(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

(D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

- **In view of the above facts, court decisions and MPEP policy, Applicant submits that the rejection on the above wrong O.A. statement should be withdrawn.**

II.3.8. Base on the above laws, court decisions, MPEP 706.02(j), 2141, 2141.02, 2143.01, 2143.03, 2145 X.D.2, objective evidence, facts, and reasons, applicant respectfully submits that the rejections on these references combination of Yoshimura and Urruti are improper and should be withdrawn.

II.4. Further Objective Evidence and Important Facts

II.4.1. A series of issued patents as cited references further prove that different measurements in a large complex process and control are challenging and unobvious to a person having ordinary skill in the art.

- Please refer to the prior art including cited Harding (1988), Yoshimura (1991), Urruti (1996), Kohei (JP 2002).
- Applicant highly honors these references and recognizes their inventions. At the same time, applicant respectfully requests the PTO to recognize his novel, useful and unobvious invention as claimed.
- Applicant was invited to present seminar by major optical fiber manufacturing company in the world.
- Applicant respectfully requests the PTO to recognize the claimed present invention patentable.

II.4.2. The present invention has also cited both references Yoshimura 5073179 and Urruti 5443610 (5551967 is a division from 5443610) in the Specification, e.g., p.4, paragraphs 0012, 0013; p.6, paragraph 0023; p.18, paragraph 0074.

II.4.3. The objective evidence is that the prior art has No any teaching of or suggestion to achieve the claimed present invention, even though a series of new inventions have been issued including Yoshimura, Urruti, and Kohei in more than a decade from Harding's invention in 1986 to the present invention submitted in 2000.

II.4.4. Examiner recognized [in his Office Communication – written Interview Summary of 3-15-2005] that "a superior embodiment using a specific algorithym may be patentable, but the claims are broad and are not limited to that specific algorithym".

- **Applicant points out that the related claims have specific limitations, such as that based on ΔD (the deviation of the preform outer diameter), $D+\Delta D$ (the preform measurement) and D (its nominal value), or double measurements of the bare fiber outer diameters, and/or their combinations in the Claims.**

- The present invention includes the new patentable subject matter in optical fiber drawing process. These novel, useful and unobvious claimed physical features over the prior art as a whole include: measuring preform outer diameter, using new robust control method and new operation principles involving ΔD, $D+\Delta D$ and D, having double bare fiber measurements at two different locations before any coating device, using new operation principle including two different bare fiber diameter measurement data sets to control the preform feeding speed and fiber drawing speed.

II.4.5. Professional Recognition – The invention has been given an award and recognition by the University of North Carolina at Charlotte. (Please see the attached copy)

II.4.6. Competitive Recognition – Recently, some foreign (and non-China) company filed a patent application in China, the content of that is basically similar and close to this present invention as they recognized. They have read and checked the applicant's this patent application in China, for that the applicant applied as an international patent application in 2002 following the US PTO permission notice to this US patent application. (Please see the attached copy)

II.4.7. Some Foreign Company Intended to Purchase the Present Invention and Application, as a factor as the U.S. Supreme Court has ruled for certain "secondary considerations".

An agent company contacted the applicant on behalf of that foreign company, and said that foreign company had intended to purchase the present invention and application of the applicant. (Please see the attached copy)

II.4.8. The above facts including the factual evidence of "secondary considerations" are submitted again for requesting consideration.

- **Supreme Court statement in *Graham v. John Deere***, 383 U.S. 1, 148 USPQ 459 (1966):

> "Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims as issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but

unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter to patented. As indicia of obviousness or nonobviousness, these inquires may have relevancy ...

This is not to say, however, that there will not be difficulties in applying the nonobviousness test. What is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context. The difficulties, however, are comparable to those encountered daily by the courts in such frame of reference as negligence and scienter, and should be amenable to case-by-case development. We believe that strict observance of the requirements laid down here will result in that uniformity and definitiveness which Congress called for in the 1952 Act."

The MPEP and Office policy

"Office policy is to follow Graham v. John Deere Co. in the consideration and determination of obviousness under 35 U.S.C. 103. As quoted above, the four factual inquires enunciated therein as a background for determining obviousness are as follows:

(A) Determining the scope and contents of the prior art;

(B) Ascertaining the differences between the prior art and the claims in issue;

(C) Resolving the level of ordinary skill in the pertinent art; and

(D) Evaluating evidence of secondary considerations."

II.5. Dependent claims 22 and 24-25 incorporate all the subject matter of claim 21 and add additional subject matter which makes them a fortiori and independently patentable over Harding 4793840.

Court decision: "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)."

Thus, based on the above cited Law, court decisions, MPEP, facts and evidences listed in above II.2 for nonobviousness of Claim 21, applicant respectfully submits that the rejection on Harding to claims 22, 24 and 25 is improper and should be withdrawn.

II.5.1. It is clear that Harding's process further omits more applicant's claimed features in Claim 22, such as the following recitation:

"measurement of said preform outer diameter or shape is on-line by a measurement

monitor device;

the measured diameter or shape is on-line real-time fed to said control system; and

said control system generates a control signal based on the measured preform diameter or shape , its deviation from the predetermined nominal preform value, and said nominal preform value,

for controlling said process in face of the deviation of the preform diameter or shape."

This fact also shows that the O.A. statement [p.10, L.1] **is in error because Harding's process lacks the on-line measurement of the preform diameter or shape, and the control principle claimed in claim 22.**

II.5.2. Harding's process further omits more claimed features in Claim 24 as recites:

"generating control signals based on the preform measurement, the fiber measurement, the deviation of the preform measurement from the predetermined nominal preform value, the deviation of the fiber measurement from the predetermined nominal fiber value, the predetermined nominal preform value and the predetermined nominal fiber value, for said optical fiber drawing process control".

The above citation is a novel control principle and patentably differs from the prior art.

II.5.3. Claim 25 additionally recites:

"wherein the position of measuring the optical fiber is at a position at which shrinkage of the outer diameter of said optical fiber is not larger than a predetermined allowable diameter deviation value of said optical fiber;

said control system generates control signals to control the drawing speed of said fiber from the melting preform and the feeding speed of said preform into the furnace, based on the measured preform outer diameter or shape , its deviation from the predetermined nominal preform value, said predetermined nominal preform value, the measured optical fiber outer diameter, its deviation from the predetermined nominal fiber value, and said predetermined nominal fiber value; and

the drawing process being carried out at said drawing speed and said feeding speed."

The above novel control principle in Claim 25 is entirely foreign to the prior art.

II.5.4. The O.A. also fails to ascertain further differences in Claims 22, 24 and 25, in addition to Claim 21, from Harding's as recited as above:

- **These recited key features are the differences that are totally Foreign not only to Harding and references but also to knowledge of ordinary skill at the time the present invention was made. Such above novel control principle is entirely Foreign to Harding's process.** Please see Harding's sole figure and his teaching [col.2, L.54-68, col.3, L.1-20]. His teaching is totally different from the above recitation of Claim 25.
- **"A predetermined allowable diameter deviation value of said optical fiber" is a calculated and represents a significant limitation in Claim 25, that is lacked by Harding's process.**
- **The O.A. statements** [p.10, L.10-17] **on Claim 25 are in error because Harding process clearly lacks the claimed features in Claim 25 as recited above.**
- **The O.A. statements are also against the objective evidence** that Harding's process should be improved by Yoshimura's process and/or Urruti's process and/or the present invention when the drawing speed becomes high for the goal of high productivity.
- **The O.A. statements are against the fact of issuing Yoshimura and Urruti patents.**
- **When the preform becomes larger and larger for the goal of high productivity, the Harding's process should be improved by the present invention.**
- **Examiner's statements** [p.10, L.11-17] **also contradict each other**, e.g., "the resultant fiber does not have any parameter which is not 'allowable' – including shrinkage" and "whereas Harding may have some unacceptable shrinkage (from Applicant's perspective), Applicant's own shrinkage could be not acceptable/allowable to someone else who desires some very specific fiber".
- **Applicant respectfully requests the PTO has a reasonable and fair examination on the present invention.**
- **The examination should not be an unreasonable examination on the application by distortion on the references for rejection to the application.**

II.6. Dependent Claim 28 is a Fortiori Patentable Over Yoshimura 5073179 and Urruti 5551967. The examiner's action and grounds for rejections are in error because his action and grounds distort the reference, are against the facts, and fail to follow the 35 USC 103 and the Supreme Court Rule in *Graham v. John Deere*, and MPEP policy as pointed out below.

II.6.1. "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)." The independent claim 26 of claim 28 is nonobvious as stated in above II.3.

II.6.2. Claim 28 additionally recites the following features which the references lack:

- "measurement of the outer diameter of said preform above the heating and melting";
- "providing said control system with the measured outer diameter of said preform";
- "wherein the control of the preform feeding speed and the fiber drawing speed of said drawing process is further based on the measured preform outer diameter, its deviation from a preselected nominal preform diameter, and said nominal preform diameter, in addition to the calculated deviations of the bare fiber"

II.6.3. Moreover, in claim 28, a novel control principle is that "the control of the preform feeding speed and the fiber drawing speed of said drawing process is further based on the measured preform outer diameter, its deviation from a preselected nominal preform diameter, and said nominal preform diameter, in addition to the calculated deviations of the bare fiber". **It is entirely foreign to the prior art and patentably differs from the prior art.**

II.6.4. Accordingly, applicant respectfully submits that the rejection on Yoshimura and Urruti to claim 28 is improper and should be withdrawn.

II.7. Dependent claims 31-36 incorporate all the subject matter of claim 30 and add additional subject matter which makes them a fortiori and independently patentable over Urruti 5551967 in view of Yamamura 6220057.

II.7.1. Court decision: "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d

1596 (Fed. Cir. 1988)."

Claim 30 is nonobvious over the reference based on the Law, court decisions, office policy, fact and evidence as listed in above II.1, thus, applicant submits that the rejection on the reference to dependent claims 31-36 should be withdrawn.

II.7.2. The O.A. fails to ascertain the following key differences between the prior art and the claim at issue. Even if Urruti and Yamamura were to be combined or modified in the manner proposed, the resultant teachings still omit one or more of the significant physical features as follows:

(1) **Claim 31 additionally recites the following features which the references lack**:

"said control signals are further based on the measured preform diameter and the preselected nominal diameter in addition to the preform diameter deviation".

(2) **Claim 32 additionally recites** double bare fiber monitoring measurements as follows:

"locating a second bare fiber outer diameter measurement device after the first bare fiber measurement device and before a coating device in which the fiber is coated;"

"providing said control system with a second bare fiber diameter measurement from the second bare fiber measurement device;"

"calculating a second bare fiber diameter deviation of the measured second bare fiber diameter from a preselected second nominal fiber diameter value which is less than the first nominal fiber diameter value;" and wherein

"said control signals are further based on this second bare fiber diameter deviation".

(3) **Claim 33 recites:** "the control signals are further calculated by an algorithm for said adjusting the feeding speed by an adjustment Δv_f to satisfy

$$\Delta v_d = [v_f \cdot (2D \cdot \Delta D + \Delta D^2) + \Delta v_f \cdot (D + \Delta D)^2] / d^2 \quad \ldots\ldots"$$

(4) **Claim 34 and claim 36 further recite**: "wherein the control signals are further based on historical measurement data of the preform and the bare fiber being drawn over a period".

(5) **Claim 35 further recites**: "said control signals are further based on the measured preform diameter and the preselected nominal diameter in addition to the preform diameter deviation"

in addition to the features in claim 32.

(6) **The above evidence also shows that the O.A. statement** [p.21, L.1-2], that "the claims are not limited to any specific control law", **is in error.**

II.7.3. The O.A. fails to establish a *prima facie* case of obviousness because the proposed combination is inoperative, destroys the both references processes, and the proposed combination still omits the applicant's claimed key steps. Moreover, the proposed combination case of Urruti in view of Yamamura does not meet all three basic criteria as required by MPEP 2142 as stated in above II.1 and II.7.2.

MPEP 2142 ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

II.7.4. The O.A. statement [p.16, L.13-14] **is in error because the equation regards a novel control principle, i.e., control law for optical fiber drawing process, that the prior art lacks. One simple example shows that the O.A. statement is wrong as follows.**

- The O.A. statement [p.16, L.13-14] is that "It is noted that the equation is merely a mass balance equation. It is impossible to not satisfy the equation."
- **For example, Urruti's control principle is totally different from the claimed control principle in claim 33, including the equation.**
- **One simple example is: to keep the fiber drawing speed and the preform feeding speed as constant speeds, respectively, disregard whatever the preform diameter is. Thus, it leads to $v_f = const.$, $\Delta v_d = 0$ and $\Delta v_f = 0$. It is clear that this control principle does not satisfy the equation when the preform diameter is not uniform.**
- **Thus, the examiner's Action clearly makes wrong statement.**

- **Thus, applicant submits that the rejections on these references and the wrong statement are improper and should be withdrawn.**

II.7.5. The O.A. statement [p.16, L.15-16] **is in error:** "Claims 35-36 It is deemed that these limitations are inherently met because all of the signals are inherently based on all other parameters."

- **The O.A. fails to show and prove all of the signals are inherently based on all other parameters, especially in view of the references.**
- **The statement that "all of the signals are inherent based on all other parameters" is incorrect.**
- **If the examiner's statement were correct, how would the examiner explain Urruti's claim 1 and claim 4?**

II.7.6. Applicant respectfully submits that the rejections on these references and the above wrong statements are unfair and should be withdrawn in view of the objective evidence.

III. Further Facts, Evidence and Reasoning for the following common issues

III.1. The proposed modification can not change the principle of operation of a reference. However, the O.A. fails to follow this rule [MPEP 2143.01] because the proposed modification or combination changes the principle of operation of the reference:

- **Urruti's operation principle of second measurement with shadow technique after coating and no preform measurement in the process control;**
- **Yoshimura's operation principle of "as a whole, limiting such factors described above" including "a preform diameter, structural factors of the drawing furnace ..." and no preform diameter measuring step in his process;**
- **Harding's operation principle of no preform diameter measurement and deviation for preform feeding speed control and fiber drawing control.**

MPEP 2143.01 THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE

If the proposed modification or combination of the prior art would change the principle of operation

of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)

The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.

Thus, applicant submits that the rejections based on the proposed modification or combination of the prior art by changing the principle of operation of Yoshimura, Urruti and Harding are improper and should be withdrawn.

III.2. The O.A. [pp.20-21, p.23] **rejection on an allowable term "based on" is unreasonable, unfair, incorrect, and in error as pointed out below.** [Details refer to 9-6-2005 Reply]

III.2.1. The term "based on" is an allowable term used in patents. Especially, it is objective evidence that the term "based on" is allowed in Yoshimura and Kenmochi's patents which are examined by the Same Examiner who is examining the present invention.

- **Yoshimura 5073179, claim 1** claims "... the drawing being carried out at a drawing rate that is controlled **based on** a deviation of the measured diameter from a preselected outer diameter" [emphasis added].
- **Kenmochi 6178778 claim 1** recites that: "adjusting the value *a* **based on** that measured diameter". [emphasis added]
- The term **"based on" is a commonly used term, and well defined in common sense.** For example, the term "based on" does Not appear in Yoshimura's Specification, but is in Yoshimura's Claim.

  Thus, how does Examiner explain his statement "Such a definition would have been made in the specification when the application is original filed" to Yoshimura's patent which is examined by the same Examiner?

- However, on the other hand, applicant uses the term "based on" in the Specification many times, e.g., paragraphs, 0043, 0044, 0049, 0086, in which the term "based on" is used as a

commonly used term.

- The term "based on" is an allowed term in claims in a lot of issued patents as briefly cited as following. Please see more in 9-6-2005 Reply I.12 [pp.17-22].

US 5,757,820 (1998):

Claim 1: "...determining whether the plurality of interconnections match the interconnect topology model based on the results of applying the plurality of test patterns".

Claim 4: "dividing the probe step of step (B) into disjoint subsets based on the probe and result sets in steps (D) and (E)."

US 6,802,049 (2004):

Claim 8: "c) computing a placement cost based on a number of bends in the connection graph."

Claim 9: "The method of claim 8 further comprising specifying a placement based on the computed placement cost."

III.2.2. The concept of the O.A. [p.10, L.8] **and 2-14-2005 O.A.** [p.10] **on the term "based on" is totally wrong, as applicant has distinctly and specifically pointed out in 5-10-2005 Reply** [pp.34-36] **and 4-7-2005 Reply** [pp.49-51]**.**

- The O.A. [6-6-2005, p.10, L.8] wrongly states "All of the control is 'based on' everything else." [emphasis added] **This statement is totally against the fact in the control area.**
- The 2-14-2005 O.A. [p.10] wrongly states that "As to the limitations that refer to the control being 'based on' diameters, deviations, etc. Such is inherent. **Everything is inherently 'based on' everything else.** ... ... Every parameter essentially is inherently 'based on' every other parameter." [emphasis added]
- **The concept that "Everything is inherently 'based on' everything else" is totally wrong.**

For example, today's date is clearly not inherently based on today's temperature, and is not inherently based on the preform diameter measurement.

There are many other counter-examples to the examiner's statements.

- It is very clear that the above O.A. statement is wrong because such is Not inherent. Please

see item C.3.6. in 4-7-2005 Reply [pp.49-51] and 5-10-2005 Reply [pp.34-36] for details.

- What should be based on, 'the amount of mass', or weight, or 'diameters', or 'deviations', or 'everything else'? Which one?

  What is to be controlled based on 'everything else', the furnace temperature distribution, or the drawing speed, or the feeding speed, or 'everything else'?

  What is control law or rule, i.e., principle in the process control, or 'everything else'?

  IT IS TOTALLY NOT INHERENT.

- Here the important key is to identify what is based on. It is entirely not inherent.

- **Yoshimura 5073179, claim 1** claims "... the drawing being carried out at a drawing rate that is controlled **based on** a deviation of the measured diameter from a preselected outer diameter" [emphasis added].

  Because it is based on a deviation, then a comparison operator (Fig. 2, Yoshimura) is needed, and a subtraction operation on the measurement from a preslected diameter is executed.

  This example clearly shows that the term "based on" or what to be based on is not inherent, but introduces significantly different calculations and limitations.

  Thus, it is clear that "Really, the phrase 'based on' introduces a specific control law or regulation for a control system and a control process" as WHAT is based on.

- **What to be based on for a control and what to be controlled based on that are very important issues in automatic control area**, including process control, **especially for very complex processes including optical fiber drawing process**.

- **Here, the key is WHAT to be "based on". Different features to be based on definitely make different limitations.**

- In the claimed inventions, the Claims specifically state key features to be based on, e.g.,

  Claims 31 and 34 recite "said control signals are further based on the measured preform diameter and the preselected nominal diameter in addition to the preform diameter deviation".

  This novel, useful and unobvious control law, as disclosed in the specification of the present

invention, is totally different from the conventional selection of a deviation only. It Is Not Inherent.

Thus, claims 31 and 34 clearly have a novel, useful and unobvious limitation over the prior art, so that the claims distinguish from and are patentable over the prior art.

III.2.3. In response to the O.A. p.21, paragraph 2, **applicant's reply is that the broadest reasonable interpretation of term "based on" should be from the well-known Dictionary.**

- **Since the term "based on" is commonly used in patents, its broadest reasonable interpretation should be clear and common.**
- **Applicant does not do any narrow interpretation for the term "based on".**
- **The O.A. fails to ascertain key differences of what is "based on" between the prior art and the claims at issue as required in Supreme Court Graham v. John Deere Co. , 383 U.S. 1, 148 USPQ 459 (1966), inquiry (B).**
- **Applicant always desires to have and to exercise the "opportunity and responsibility to remove any ambiguity in claim term meaning by amending the application".**
- **However, the term "based on" is allowable term in the patents.**
- **It is required that the O.A. should not break and disregard the words following the term "based on". They should be considered as a whole to observe the patentable differences from the prior art.**

III.2.4. The O.A. wrongly rejects Claim 34 by "Everything is 'based on' nearly everything else to some degree: this applies to claim 34" [p.17, L.1-2]. **This statement is in error as well.**

- **The O.A. fails to show the above new concept is correct in view of "Everything".**
- **It is noticed that the O.A. does wrongly state "Everything is inherently 'based on' everything else" in the Action of 2-14-2005** [p.10, L.7]. **That is a wrong concept.**
- **Please see 4-7-2005 Reply** [pp.50-51] **to this wrong statement.**

That Reply is also valid to show the above little modified statement in this O.A. [p.17,

L.1-2] **is in error. Also, please see the above Ⅲ.2.2.**

- **It is objective evidence in Yoshimura 5073179 that Examiner approves the usage of term "based on" in Yoshimura's claim 1.**
- **Applicant submits that the rejection on this wrong and unreasonable ground should be withdrawn.**

Ⅲ.2.5. The O.A. statement [p.23, L.15-18] **is in error because of the following reasons:**

- The O.A. [p.23, L.15-18] states: "It is further argued that 'based on' in claim 31 defines that 'the control signals are generated by computation .....' Examiner could find no basis for such a definition. Claim 33 does not require any step of generating or computing. Applicant is not permitted to redefine what is meant by 'based on'."
- **The fact is that claim 31** is a dependent claim of **claim 30. Claim 30 recites**:

  "calculating a preform diameter deviation of the measured preform diameter from a preselected nominal preform diameter value, and a fiber diameter deviation of the measured fiber diameter from a preselected nominal fiber diameter value;

  generating control signals based on the preform deviation and the fiber deviation for said optical fiber drawing process control; and

  adjusting the feeding speed of said preform and the drawing speed of said fiber as said control signals command". [emphasis added]
- **Furthermore, claim 31 recites**:

  "said control signals are further based on the measured preform diameter and the preselected nominal diameter in addition to the preform diameter deviation".
- **The fact is that claim 33** is a dependent claim of **claim 32** and that claim 32 is a dependent **claim 30. Furthermore, claim 33 recites**:

  "the control signals are further calculated by an algorithm for said adjusting the feeding speed by an adjustment Δv_f to satisfy

  $$\Delta v_d = [v_f \cdot (2D \cdot \Delta D + \Delta D^2) + \Delta v_f \cdot (D + \Delta D)^2] / d^2$$

  where ΔD is the preform diameter deviation, $D+\Delta D$ is the measured preform diameter, D

is the nominal perform diameter, v_f is a predetermined perform feeding speed, Δv_d is an adjustment of the drawing speed, and d is the nominal fiber diameter".

- The above facts also clearly show that the O.A. statement [p.23, L.15-18] is in error.
- **Therefore, from the above evidence, facts and reasons, the claimed invention distinctly and patentably differs from the references including Yoshimura, Harding, Urruti and Yamamura. It is Unobvious over the references.**

III.2.6. The O.A. statements [p.10, L.18-21; p.11 L.1-3] **are in error because <u>its concept is entirely wrong</u> and <u>they also distort the Harding process</u>** by stating "As to the control system: it is clear that Harding's system generates signals for the purpose of controlling drawing speed – and it is **<u>'based on' everything</u> <u>including inconsequential stuff</u>** <u>like the gravity from the **moon**</u>." [emphasis added]

- **Applicant respectfully requests the PTO has a reasonable and fair examination on the present invention again.**
- **However, Examiner's Action is again unreasonable on the application and again does distortion on the references for the rejection to the application, e.g., in view of the above cited O.A. statement.**
- **Examiner's Action fails to recognize Harding's process control is Not based on the preform diameter measurement, when examiner states that** "For example, if Harding's average diameter was 10 cm, then almost the entire process would be different from a process where the diameter is 15 cm. Harding's process is inherently based on every one of the claimed parameters." [p.10, L.20, p.11, L.1-3].

  Furthermore, Harding's process will not be stable if Harding's preform average diameter is 10 cm and the preform diameter is 15 cm, and its optical fiber product quality will be out of control because the following reasons and the facts:

  - **Harding's control system lacks the diameter measurement 15 cm of the preform for the control;**
  - **Harding's process uses 10 cm average diameter of the preform for beforehand calculating the normal or preset fiber drawing speed of the process;**

- **The preform feeding speed and the fiber drawing speed are not controlled based on both the preform diameter measurement and the nominal preform value in Harding's process.**

- **The O.A. fails to observe the evidence that Harding's control law for preform feeding speed is not based on every one of the claimed parameters, such as the preform diameter measurement.** Please see Harding col.2, L.54-68 and col.3, L.1-20. **The Harding's fiber drawing speed is also Not based on the preform measurement.**

- **The O.A. statement is against the Harding's teaching** [col.2, L.54-68, col.3, L.1-20].

- **Because the O.A. is in error as pointed out above, Applicant submits that the rejection on the above wrong statement to Claim 21-22 and 24-25 should be withdrawn.**

III.2.7. Applicant therefore respectfully submits that the rejection to Claims 21-22, 24-25, 30-36 and others based on the above O.A. statements is improper and should be withdrawn because these claims are "based on" their patentable distinguished limitations respectively, and the term "based on" is an allowable term in patents.

III.3. As to the "bare fiber", the O.A. fails to respect the fact again, especially after applicant has pointed it out clearly in 4-7-2005 Reply and 3-11-2005 Record as follows:

(1) Record of the Substance of the Interview of 3-11-2005 [p.3, L.11-12]:

"'Bare fiber' recited in Claims 26-29, 32-34 is a term of art in US 5073179 [Yoshimura] and 5551967 [Urruti] and it is clearly described and shown in figure 1 of the application". [remark added]

(2) Brief Description of Arguments to be Presented, 2-15-2005 [fax to the Examiner]:

"9. **The sentence regarding 'bare fiber' in paragraph 0003 under Section 2 Description of the Related Art is cited from Yoshimura 5073179**. The term bare fiber has been well used, such as in Yoshimura 5073179, and Urruti 5443610 and 5551967, which were examined by the same Examiner." [p.1, last line; p.2, L.1-3] [emphasis added]

(3) 4-7-2005 Reply [p.13, L.17-22]:

"However, the sentence regarding 'bare fiber' in paragraph 0003 under *Section 2 Description*

of the Related Art is cited from Yoshimura 5073179, col. 1, lines 16-18.

'Bare fiber' recited in Claims 26-29 and 32-34 is a term of art in US 5073179 (Yoshimura, col. 1, lines 16-18 and 18-26) and US 5443610 and 5551967 (Urruti, col. 1, lines 22, 24, 25; col. 2, lines 24; and abstract), and it is clearly described and shown in all Figures 1-10 of the application as 'Bare Fiber 5'." [emphasis added]

- **It is pointed out again that the Examiner is exactly the SAME Examiner for Yoshimura 5073179. This term of art "bare fiber" in paragraph 0003 is Yoshimura's that has been examined by the same Examiner. It is not applicant's definition.**
- **Applicant very respects other experts' work. It is Yoshimura's definition.**
- **The term "bare fiber" is well used in Yoshimura, in Urruti, and in the present invention. It is commonly understood for the optical fiber before any coating.**
- **Especially, applicant clearly points out what "bare fiber" is in all his Figures 1-10 in the present invention. Urruti and applicant use term "bare fiber" in the same way as it before the coating.** An ordinary skill uses bare fiber in a same way as it before the coating.

III.4. The response to the O.A. [p.6, p.23, L.19-21] **comment on "historical measurement data" is as follows.**

- The Specification recites as follows in paragraphs [emphasis added]:

"0039 In order to solve the time lag problem and the highest accurate measurement requirement for optical fiber, the present invention keeps a conventional outer diameter measurement at a safe position just immediately below the furnace. ... ...

0044 In the present invention, one choice of control law can be, but not limited to, based on a deviation of a final measured diameter of the bare fiber coming into the coating step from the specified outer diameter, a deviation of a measured diameter of the bare fiber leaving from the furnace from a preselected outer diameter, and a deviation of a measured outer diameter of the preform coming into the furnace from a preselected outer diameter. It may also be based on the fluctuation data from the current measurements in the above-mentioned diameter measurement monitors and the ones as certain period measurement history data.

....

0078 In FIG. 1, monitor 10 for the preform is located at a safe position immediately above the furnace 3 in order to reduce the time lead; monitor 20 for the bare fiber is located at a safe position immediately below the furnace 3 in order to reduce the time lag; and monitor 40 for the finished bare fiber is located at a safe position immediately above the coating device in order to provide very high accurate measurement of the outer diameter for the finished bare fiber".

- It is clear from the above citation from the Specification that the "history data" in the above-mentioned diameter measurement monitors are the time-lead or time-lag data.

- Claim 34 recites:

  "The control method as claimed in Claim 33, wherein the control signals are further based on historical measurement data of the preform and the bare fiber being drawn over a period; whereby the process control provides robust performance of the drawing process and robust quality of the fiber further against the fluctuations of the diameters, time-lag and time-lead of said measurements corresponding to the heating and melting stage".

- Claim 36 recites:

  "The control method as claimed in Claim 35, wherein the control signals are further based on historical measurement data of the preform and the bare fiber being drawn over a period; whereby ... robust quality of the fiber further against the fluctuations of the diameters, time-lag and time-lead of said measurements corresponding to the heating and melting stage".

- From the Specification as a whole regarding the historical measurement data, time-lag and time lead measurement, and arranging the measurement locations to reduce the time-lead and time lag, it is clear that to use historical data is also to reduce time-lag and time-lead in view of time and they are time-lead and time lag measurement data.

- **In view of the above cited support from the Specification and recitation of Claims 34 and 36, the rejection on "historical measurement data" should been withdrawn.**

III.5. Response to the comments on the language "robustly", "robust performance", "robust diameter-controlled" and "robust quality" is as follows:

- The O.A. [p.4] comments that "The language 'robustly', 'robust performance', 'robust

diameter-controlled' and 'robust quality' are 'words of degree' which are imprecise unless a definition or guidance has been set forth in the specification or the term is otherwise well known in the art."

- The term "robust control", "robust performance", "robust quality" and robustly" have been well frequently used since late 1980s, especially in 1990's and now.
- The key and difficulty is what kind of robust performance and robust control, and how to complete it.
- Especially, as Applicant pointed out many times in the previous Replies, applicant clearly defines and specifies the robust control and robust performance of his invention in the Specification as cited in the Claims as follows: [emphasis added]

  Claim 21: "robust performance of said process and robust quality of said optical fiber *against deviations of the preform outer diameter or shape at different locations and against deviations of various preforms, making a robust diameter-controlled optical fiber*".

  Specification, paragraph 0049: "Thus, it is a kind of robust control in face of fluctuations of the preform outer diameters and fluctuation of the bare fiber outer diameters due to various factors including the furnace temperature fluctuation".

  Paragraph 0080: "Then, all these measured data are combined into an overall robust control system to form a fiber drawing speed control signal for capstans 13 and a preform feeding speed signal for the preform feeding mechanism 1, respectively."

  Paragraph 0083: "The robust control system obtains the feedback signals from these diameter monitors and controls the fiber drawing speed and the preform feeding speed for producing *robustly diameter controlled optical fibers*."

  Paragraph 0096: "As described above, according to the present invention, the absolute value of the outer diameter of the optical fiber can be not only measured correctly but also robustly controlled, whereby the optical fiber with better accuracy in its size is produced in face of fluctuations of the preform diameters, fluctuations of the furnace conditions, various disturbances and parameter perturbations, especially in a high productivity situation with increasing drawing speed, enlarging preform size and raising high performance of optical fiber during the optical fiber drawing process. *Thus, this present invention provides*

robust diameter-controlled optical fibers during optical fiber drawing process."

- **Thus, applicant respectfully requests the PTO to allow the above terms "robust control", "robust performance" and "robust diameter-controlled".**

III.6. The O.A. statements [p.14, L.1-5, p.20, L.22-24] **ignore the important fact differences of the process Control Principle which is based on the deviations and nominal diameters, or not. The statements ignore the difference between the process control utilizing the deviations and nominal diameters and the one not utilizing. It is totally not inherent.**

- **The O.A. states:** [p.14, L.1-5] "As to the deviations and nominal diameters – all such would be inherently part of the process: the process would proceed regardless of deviations and a nominal diameter – and such would effect the process"; and

  [p.20, L.22-24] "For example, if a preform has a 50% deviation in diameter, the 50% deviation will inherently effect the process – regardless of whether a computer measures the deviation or not".

- **However, the above O.A. statements again omit or ignore the following important keys:**
  - **how the process control system to deal with it;**
  - **differences between the prior art and the present invention, including the control principles differences;**
  - **especially the differences between having a control based on the calculated preform diameter deviation of the measured preform diameter from a preselected nominal preform diameter value as clearly claimed in claim 30 for adjusting the preform feeding speed and fiber drawing speed and Non-having this control in the prior art;**
  - **What deviations and what nominal diameters are, whether to use them or Not, and what the control principle is.**

- **All these are not inherent part of the process. Please see the difference of Yoshimura and Urruti as an example. Do Yoshimura and Urruti need their measurements, deviations and nominal diameters of bare fiber and coated fiber for their process control in view of the O.A. statement?**

- **Further, applicant asks:**

  whether Yoshimura and Urruti do not need to do their inventions because the deviations and nominal diameters – all such would be inherently part of the process?

- **As to the wrong rejection on the above statements, applicant asks:**

  whether the optical fiber drawing process can be successful without any drawing process control, according to the concept: "the process would proceed regardless of deviations and a nominal diameter – and such would effect the process", or not?

- **On the other hand, Yoshimura's and Urruti's processes both do Not input the deviations of the prefrom diameter into their respective control systems and do Not use them in their respective control in view of their control principles.**

- **The above O.A. statements are another clear objective evidence that the claimed present invention is Unobvious.**

- **The new control principles as claimed in the claims are totally Foreign to the prior art. The claimed present invention patentably differs from the prior art.**

- **Applicant respectfully submits that the rejection on this statement and these references should be withdrawn.**

III.7. The O.A. fails to follow the Resolutions cited in MPEP for resolving the level of ordinary skill in the pertinent art, and fails to "present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references" as required in *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) **cited by the MPEP 706.02(j). The reasons are as follows.**

- **The O.A. fails to identify the key differences between the references and the claimed invention as pointed out in above section II.**

- **The fact is that the claimed present invention is totally Not a case of just "automating a manual activity" of the references. Thus, the O.A.** [p.8, L.10-20] **wrongly cites a citation which is Not relevant.**

- **Applicant therefore submits that to automate Harding's process, as the O.A. proposed**

for an ordinary skill, is not the claimed present invention. It is a clear fact and objective evidence from the Harding's Specification.

- **Moreover, the examiner's action again cuts some words from the reference and then explains them in different ways from the reference teaching for making the rejections,** e.g., please see the O.A. [p.7, L.15, L.23-25; p.8, L.1-3] as pointed out in the above II.2.6.
- **Furthermore, the prior art reference (or references when combined) does Not teach or suggest all the claim limitations as shown in section II.**
- **Applicant submits that examiner's Action allegation of obviousness is not legally justified and is therefore improper. Thus applicant submits that the rejection on the references is also improper and should be withdrawn.**

III.8. The O.A. fails to determine the correct scope and contents of the prior art as specifically pointed out in 9-6-2005 Reply, e.g., even omitting the scope and contents of Urruti in inquiry (1) [O.A. p.11], and **Yamamura in inquiry (1)** [O.A. p.15]. Furthermore, the O.A. [p.19, L.14-15] states "This is not (by itself) very relevant. No two patents are exactly of the same scope – thus every two patents are of different scope." **However, it is important to follow the MPEP policy to comply with Supreme Court statement in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), including to determine the correct scope of the prior art.**

- For example, **Yamamura clearly states his invention scope:** "Apparatus and method for drawing a glass ingot" in his invention title [L.1] and abstract [L.1]. In his claims, he clearly recites: "A method for drawing a glass ingot" in claim 1 [L.1] preamble, and "An apparatus for drawing a glass ingot" in his claim 4 [L.1] preamble, that are his two independent claims.
- **Yamamura clearly states his Field of the Invention** as "This invention relates to a method for drawing a glass ingot wherein the glass ingot is drawn to a predetermined outer diameter to obtain a glass rod or preform for an optical fiber having the predetermined outer diameter" [col. 1, lines 6-10]. [emphasis added]
- **Therefore, the objective evidence is that Yamamura's process scope and field is for drawing a glass ingot, and not fiber, at best it relates to preform, as Yamamura states.**

- **The optical fiber drawing process and the preform manufacturing process are two different processes and different fields, as listed in the references and the prior art including many issued patents in these two different fields.**

Ⅲ.9. The O.A. fails to ascertain all major differences between the prior art and the claims at issue, as pointed out specifically in details in 9-6-2005 Reply and the above Section II, e.g., even omitting Yamamura in inquiry (2) [O.A. p.15].

Ⅲ.10. The O.A. statement [p.19, L.9-12] **is incorrect because to respect the facts is a common law, otherwise how Examiner's Action can make correct conclusion if not to respect the facts.**

- The O.A. [p.9, L.9-12] states "As to Applicant's request for Examiner to respect the facts, science, engineering and technology to give fair and reasonable analysis and conclusion. However, patents are legal documents. Laws, regulations, court decisions and Patent Office Policy are at least as important than engineering principles."
- **It is clear that the above O.A. statement is incorrect because the following fact and reasons:**
  - (i) **To respect the facts is a common law.**
  - (ii) **There are No any patent laws, regulations, court decisions or Patent Office Policy to state that examiner should Not respect the fact and science, engineering and technology, or examiner should not give fair and reasonable analysis and conclusion.**
  - (iii) **There is no conflict between "to respect the fact and science, engineering and technology to give fair and reasonable analysis and conclusion" and "laws, regulations, court decisions and Patent Office Policy".**
  - (iv) **Moreover to give a fair and reasonable analysis and conclusion is of course required in patent examination.**
- **Here, applicant again respectfully requests Examiner to respect the fact and science, engineering and technology to give fair and reasonable analysis and conclusion.**

- **Of course, applicant respectfully requests Examiner to comply with laws, regulations, court decisions and Patent Office Policy.**

Ⅲ.11. Based on the Law, court decisions, fact, objective evidences, Office policy and the claims at issue as cited in the above and below, e.g., MPEP 706.02(j), 2141.02, 2142, 2143.01, 2143.03, 2145.Ⅲ, 2145.X.D.2, , the present invention as claimed is patentable over the prior art.

Ⅳ. As to O.A. statement [p.24, L.10] "Kohei (JP 06-206734) is cited as being cumulative to Urruti", **Applicant submits that in view of Yoshimura, Urruti and Kohei, the clear and objective evidence of issuing these patents further clearly and strongly show that the claimed present invention is Unobvious and Patentable.**

Ⅳ.1. Kohei's process lacks the key features in the claimed present invention, such as:

(1) outer diameter measurement of preform prior to entering furnace;

(2) double outer diameter measurements of the bare fiber after the furnace and prior to coating; and

(3) applicant's novel control principles and methods.

Ⅳ.2. Kohei's process control uses only one bare fiber diameter measurement at any time: from device 21 at the beginning period or from device 14 at the time when the drawing speed reaches a predetermined speed, but not both at any time.

- **Thus, Kohei's process does not use double outer diameter measurements of the bare fiber for the fiber drawing process control.**
- **Kohei** clearly states his invention in section **[Means for Solving the Subject]** as follows:

  The invention method of the optical fiber manufacturing to achieve said objective is a manufacturing method which draws the optical fiber from the heated and melted optical fiber preform in a wire-drawing furnace; the feature of said method is that:

at a drawing speed rising period of the optical fiber which is out from the wire-drawing furnace and in the measurement sight, the method uses a wide-sight measurement device located between the wire-drawing furnace and a narrow-sight outer diameter measurement device for the fiber diameter control to measure the optical fiber outer diameter, and at the time after a stable fiber drawing speed is reached, the method switches to using the narrow-sight measurement device to measure the optical fiber outer diameter. [col. 2, paragraph 0007]

- It is very clear from Kohei's teaching as a whole that at the time before the drawing speed of the optical fiber 13 reaches a prescribed drawing speed (100m/min), Kohei's process uses bare fiber measurement from outer diameter measurement device 21; while at the time after the drawing speed reaches the prescribed drawing speed (100m/min), Kohei's process uses bare fiber measurement from outer diameter measurement device 14 by switching device 21 to device 14.

  Also please see Kohei's teaching [col.3, paragraph 0012 – 0015] that clearly shows the fact that only one bare fiber diameter measurement is used at any time.

IV.3. The O.A. fails to address the feature of Kohei's process and fails to recognize the fact and objective evidence that Kohei's process lacks one or more key features of the claimed present invention as listed above, when the O.A. cites reference Kohei and states "Kohei (JP 06-206734) is cited as being cumulative to Urruti." [O.A. p.24, L.10]

IV.4. The issue of Yoshimura 5073179, Urruti 5551967 and Kohei JP 06-206734 is the objective evidence which shows that the present invention is Unobvious, otherwise these experts would have taught the present invention features.

- From Kohei's fig.1 and teaching [col. 2, paragraph 0007, col.3, paragraphs 0012-0015], it can be seen that Kohei's process is close to Yoshimura's fig.3 and teaching [col. 2, L.64-68].
- **The applicant very respects Yoshimura, Urruti and Kohei's inventions, and honors their advanced work for optical fiber drawing process.**
- **At the same time, Applicant respectfully requests the PTO to honor the claimed present invention that is novel, useful and unobvious over the prior art.**

V. Conditional Request for Constructive Assistance

Applicant has amended the claims of this application as shown in the previous Replies so that they are proper, definite, and define novel structure which is also unobvious.

If for any reason this application is not believed to be in full condition for allowance, Applicant again respectfully requests Examiner to write one or more allowable claims for the present invention and the constructive assistance and suggestions, pursuant to MPEP 707.07(j) and 7.43.04 in order that undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings. At the same time, applicant further respectfully request Examiner to answer all material traversed as MPEP 707.07(f) requires.

MPEP 707.07(f) – Answer All Material Traversed

"Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it."

MPEP 707.07(j) State When Claims Are Allowable [R-2]

I. INVENTOR FILED APPLICATIONS

When, during the examination of a *pro se* application it becomes apparent to the examiner that there is patentable subject matter disclosed in the application, the examiner should draft one or more claims for the applicant and indicate in his or her action that such claims would be allowed if incorporated in the application by amendment.

This practice will expedite prosecution and offer a service to individual inventors not represented by a registered patent attorney or agent. Although this practice may be desirable and is permissible in any case deemed appropriate by the examiner, it will be expected to be applied in all cases where it is apparent that the applicant is unfamiliar with the proper preparation and prosecution of patent applications.

III. EARLY ALLOWANCE OF CLAIMS

Where the examiner is satisfied that the prior art has been fully developed and some of the claims are clearly allowable, the allowance of such claims should not be delayed.

VI. Respectful Request for Reconsideration

From all of the above and the previously submitted Replies, it can be seen that the claims of the present invention are patentable over the prior art.

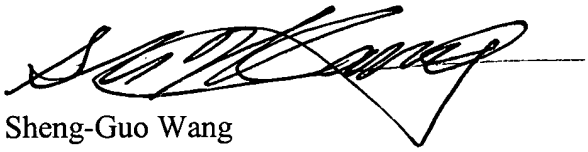
Therefore, Applicant respectfully requests the PTO for reconsideration.

VII. Conclusion

For all of the above reasons, applicant respectfully submits that the claims are now in proper form, and that the claims all define patentably over the prior art. Therefore applicant respectfully submits that this application is now in condition for allowance, which action he respectfully solicits.

Applicant respectfully requests the PTO to view and recognize the new, useful, unobvious and patentable merit of the claimed present invention as a whole.

Very respectfully,



Sheng-Guo Wang
704-503-0747
Dec. 5, 2005

---------- Applicant Pro Se ----------

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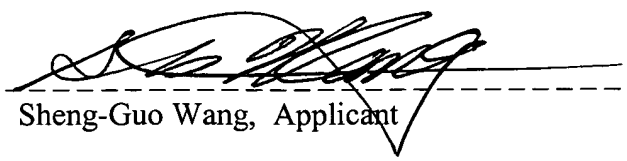
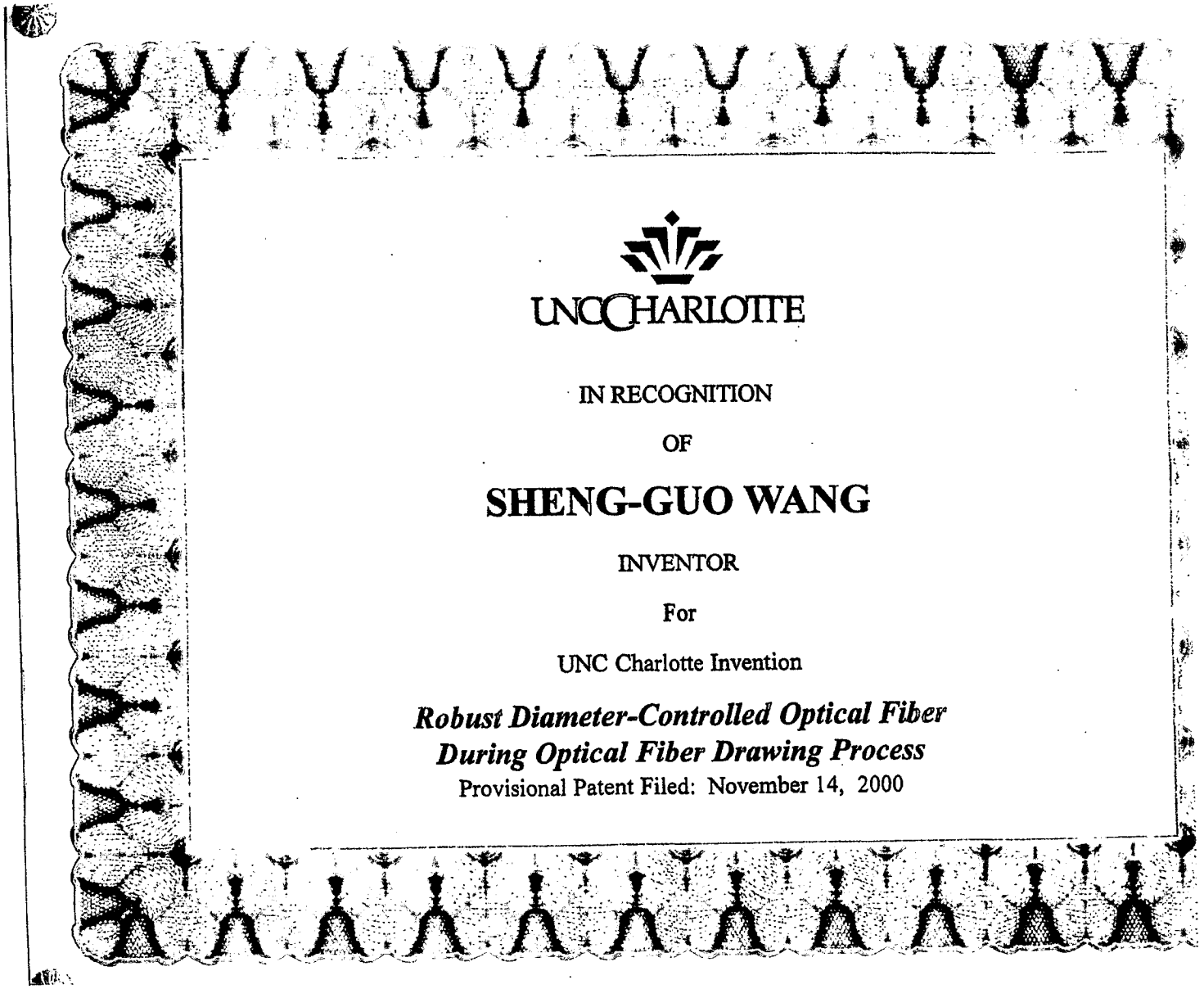
Dec. 5, 2005 

Sheng-Guo Wang, Applicant

Substantial Feature Comparison Table

(Dr. Sheng-Guo Wang 12-5-2005)

	Optical Fiber Drawing Process	Measurements at different locations for fiber drawing process			Feed speed control using Preform dynamic data	Drawing speed control using Preform dynamic data	Tensor control using Preform dynamic data	Feed speed & Drawing speed control using Double Bare Fiber measurement data	New robust control method law
		Preform outer diameter	One Bare Fiber Measurement	Double Bare Fiber Measurement before coating					
The Applicant's Invention (US)	X	X	X	X	X	X	X	X	X
	X	X	X		X	X	X		X
	X	X			X	X	X		X
	X		X	X				X	X
Yamamura (JP) US 6220057	Glass Ingot manufacture (2M in furnace)								
Yoshimura (JP) US 5073179	X (1 after furnace before coating)		X						
Urruti (US) US 5551967	X (1 after furnace & 1 after coating)		X						
Harding (GB) US 4793840	X (only 1M)		X						
Kohei (JP) US 6178778	X (1 M at any time, switched from 2 locations)		X 1 M at any time						



UNCCHARLOTTE

IN RECOGNITION

OF

SHENG-GUO WANG

INVENTOR

For

UNC Charlotte Invention

Robust Diameter-Controlled Optical Fiber During Optical Fiber Drawing Process

Provisional Patent Filed: November 14, 2000

深联商業貿易進出口代理中心

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我代理中心在会场上安置开放了22台宽带互联网电脑，供参加会议的企业领导专门查阅高新技术信息。

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深联商业贸易进出口代理中心

联系人：[illegible]

主任：黄天成

二００四年七月八日

Shen Lian Business Trade Export & Import Agency

Address: Shen Lian Building, Shekou Industrial Zone, Shenzhen, Guangdong Zip: 518067
Tel.: 0755-81597411 Digital Fax: 013926580133

Mr. Sheng-Guo Wang:

Our Agency provides uncommon opportunities for intangible assets transfer when we are doing business exports and imports.

Our Agency has set up 22 broad-band internet-connected computers for company leaders who attend conferences to review new high-tech information.

Now there is a foreign company in our province submitting an application for a patent to the State Intellectual Property Office of PRC, that is basically similar and close to the content of your patent application "Robust diameter-controlled optical fiber during optical fiber drawing process". Your patent application has not been issued the patent certificate. However, this company manager is urgent to consider this conflict, and is willing to negotiate to purchase your this technology and patent application. With your Official Filing Receipt, it is able to start the negotiation. This company has designated our Agency to do this business.

Now we are asking for your opinion. If you have an intension to transfer this patent right, please call us at 0755-81597411in 10 days after you receive this letter. This matter is handled by our Chief Officer, his mobile phone number: 013554775259, fax: 013926580133 (this digital fax can also receive normal fax). Please indicate this patent file serial number in computer: PX 1708 when you call us.

Your patent material is open to the public. We have searched your patent material at the State Intellectual Property Office of PRC. The intended party has also reviewed your patent material. When I have got your contact, I will immediately start next stage work. I hope to have your cooperation.

We promise to you: our Agency will not charge you any costs before success, but after the success, we will charge you 3% of the total amount of the deal as an agent fee.

Sincerely,

Shen Lian Business Trade Export & Import Agency
Liaison person: Huaqing Li
Chief Officer: Tianchen Huang

July 8, 2004

(Company Stamp) **Shen Lian Business Trade Export & Import Agency**